



Municipality of Singapore

Health Department

ANNUAL REPORT

for

1931

PRINTED BY
PRINTERS LIMITED
SINGAPORE.

1932

MUNICIPAL HEALTH OFFICE.

Singapore, 8th March, 1932.

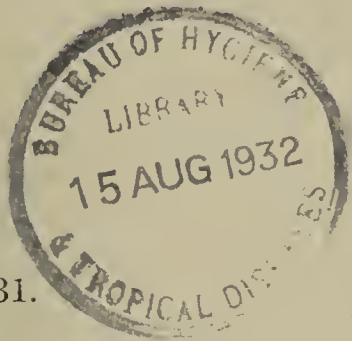
THE PRESIDENT,

MUNICIPAL COMMISSIONERS,

SINGAPORE.

SIR,

I have the honour to submit my report for 1931.



I. ZYMOTIC DISEASE.

1,416 cases were notified compared with 1,579 in 1930 and 1,713 in 1929.

The following table shows the comparison between the year under review and the previous ten years.

Year	Enteric Fever	Diphtheria	Chicken-pox	Puerperal Fever	Erysipelas	Cerebro-Spinal Fever	Paratyphoid Fever	Small-pox	Plague	Cholera	Typhus Fever	Scarlet Fever	Tuberculosis	Total
1921	127	49	119	13	11	70	4	150	28	1	—	—	319	891
1922	68	52	127	16	7	32	2	268	39	1	—	—	169	781
1923	63	37	188	12	14	9	1	3	52	—	—	—	409	788
1924	64	38	230	22	9	16	—	9	20	11	—	—	331	750
1925	136	51	31	14	2	10	2	10	59	1	—	—	365	681
1926	197	46	169	25	14	6	1	34	7	22	1	1	642	1165
1927	235	29	193	22	5	17	7	19	4	30	—	—	733	1294
1928	230	59	350	11	8	15	12	9	5	9	1	3	808	1520
1929	133	57	577	13	8	3	—	9	3	—	—	6	904	1713
1930	156	63	349	11	9	22	2	—	—	—	—	2	965	1579
Average for 10 years	140.9	48.1	233.3	15.9	8.7	20.0	3.1	51.1	21.7	7.5	.2	1.2	564.5	1116.2
1931	150	65	211	28	6	8	1	3	—	—	—	—	944	1416

The following table shows the incidence by nationalities.

				Europeans	Eurasians	Chinese	Malays	Indians	Others	Total
Enteric Fever	..	..	..	5	6	114	3	17	5	150
Diphtheria	..	..	..	2	7	51	3	1	1	65
Chicken-pox	..	..	..	2	2	29	7	170	1	211
Puerperal Fever	..	..	..	1	2	18	1	6	—	28
Erysipelas	..	..	..	—	1	4	—	1	—	6
C. Spinal Fever	..	..	..	—	—	5	1	2	—	8
Paratyphoid Fever	..	..	..	—	—	1	—	—	—	1
Small-pox	..	..	..	—	—	—	—	3	—	3
Plague	..	..	..	—	—	—	—	—	—	—
Cholera	..	..	..	—	—	—	—	—	—	—
Typhus Fever	..	..	..	—	—	—	—	—	—	—
Scarlet Fever	..	..	..	—	—	—	—	—	—	—
Tuberculosis	..	..	..	2	18	703	52	154	15	944
Total ..				12	36	925	67	354	22	1416

The following return shows the number notified for each month of the year:—

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Enteric Fever ..	14	18	14	12	9	15	16	12	12	14	4	10	150
Diphtheria ..	6	2	1	7	3	8	2	3	8	9	4	12	65
Chicken-pox ..	19	13	36	14	13	17	13	9	5	8	15	49	211
Puerperal Fever	3	—	7	2	2	3	5	2	1	2	—	1	28
Erysipelas ..	1	—	1	1	—	1	—	—	—	1	1	—	6
C. Spinal Fever	—	1	2	—	—	2	1	—	—	—	—	2	8
Paratyphoid ..	—	—	1	—	—	—	—	—	—	—	—	—	1
Small-pox ..	—	—	1	2	—	—	—	—	—	—	—	—	3
Plague ..	—	—	—	—	—	—	—	—	—	—	—	—	—
Cholera ..	—	—	—	—	—	—	—	—	—	—	—	—	—
Scarlet Fever ..	—	—	—	—	—	—	—	—	—	—	—	—	—
Tuberculosis ..	103	67	88	74	103	98	71	66	73	49	76	78	944
Total ..	146	101	151	112	130	144	108	90	99	83	100	152	1416

The most noteworthy fact in these returns is our continued freedom from the dangerous infectious diseases Cholera, Smallpox and Plague. No case of Cholera or Plague was notified and only three cases of Smallpox. These occurred in Indians. It was satisfactorily established by investigation that at least two were imported cases. The first case was discovered on March 30th. He stated that he had left Calcutta on February 15th. At that date Calcutta was an infected port. The second case was admitted on April 1st. He was known to the first case and he also had just arrived from India. He had lodged at a house in Upper Weld Road. On 20th April the third case came voluntarily for admission. He was of the same race and though he refused to give any information about himself or his recent movements there was a strong suspicion that he also came from Upper Weld Road. Most likely he was a contact of one of the other cases who had escaped quarantine.

One of the cases died.

TYPHOID AND PARATYPHOID FEVERS.

151 cases of which one was Paratyphoid were notified. 86 deaths were reported under this heading so that I would point out, once again, that the notifications are no indication of the real incidence of the disease. The monthly notifications varied from 4 in November to 18 in February but on the whole the cases were evenly spread throughout the year. They were also evenly distributed throughout the town. The deaths were similarly distributed and at no time was there any sign of an epidemic—in other words the cases had no common source of infection but must have been contracted from existing cases or carriers—most probably through the medium of infected food. All cases were carefully investigated but no connection between cases could be made out.

TUBERCULOSIS.

944 cases were notified and 1,377 deaths were reported. The same remark, therefore, with regard to the real incidence of the disease, holds good.

DIPHTHERIA.

65 cases were notified. They were evenly spaced throughout the year.

Of 1,026 swabs taken after death from the throats of children under 10 years of age, who had not been seen in life by a medical man the Diphtheria bacillus was demonstrated in 17 or 1.65%. Of these 5 of the children were under 1 year of age and all the remainder were under 5 years.

CEREBRO SPINAL MENINGITIS.

8 cases were notified during the year. No connection could be traced between any two of them.

GENERAL.

1. Medical inspection of Passengers.

65 permits to land were granted to 91 passengers, 8 of whom failed to report.

2. Disinfection of infected articles.

962 articles were disinfected—the steam disinfector was used on 8 occasions only.

3. Houses quarantined and disinfected.

No houses were quarantined. 422 houses (Phthisis cases 286) were disinfected.

4. Infected Persons and contacts.

215 persons were removed to Middleton Hospital. 21 bodies were buried under supervision.

II. MIDDLETON HOSPITAL.

At the end of 1930 there were 11 patients remaining in hospital while during the year under review there were 433 admissions making a total treated of 444. Of these 372 were discharged, 33 died, while 39 remained in hospital at the end of the year.

The most serious disease was Diphtheria, with 46 admissions and 16 deaths. 13 of the cases required tracheotomy and of these 7 died.

The report of the Medical Officer is appended.

III. VACCINATION.

The following vaccinations were reported.

	Successful	Modified	Failed	Not Seen	Total
Municipal Vaccinators	9,764	75	75	209	10,123
Private Vaccinators ..	1,198	—	—	—	1,198
Medical Men ..	2,442	—	3	—	2,445
Total ..	13,404	75	78	209	13,766

Of the total number of 10,123 vaccinations performed by the Municipal Vaccinators 98.5% of those seen for the second time were found to be successful.

The nationalities of those vaccinated by Municipal Vaccinators were Europeans 19, Eurasians 123, Chinese 8,399, Malays 915, Indians 446 and Others 221. Of these 5,467 were males and 4,656 females of the following ages:—

Under 1 year	..	..	..	8,200
1 to 2 years	..	..	..	352
2 to 5 „	..	..	..	349
5 to 10 „	..	..	..	393
10 to 20 „	..	..	..	215
Over 20 „	..	..	..	614

10,123

6,945 vaccinations were performed at our dépôts, 1,800 at Police Stations, 387 in the Child Welfare Clinics, 608 in Schools and 366 in private houses. In addition 17 contacts were vaccinated.

Some years ago I was rather nervous of the vaccination state as it seemed many children were being missed. Accordingly the staff of vaccinators was increased and at the same time it was made part of the duties of the Child Welfare Visitors to advise parents to have their children vaccinated.

There were 16,488 births during the year and a total of 13,766 vaccinations, mostly on infants, were performed. It will be agreed I think that very few were missed.

The arrangement whereby the Welfare Visitors keep a watch on the vaccination state up to the age of six months has proved a complete success, so much so that during the year it was found possible to dispense with the services of two of the vaccinators.

VITAL STATISTICS.

The decennial census fell due during the year under review and the enumeration was actually made on the night of April 1st. The population of the Municipal Area was found to be 445,719 which figure I propose to use without further correction in the statistical tables to follow. By April 1st the full effects of the slump were, I think, evident. Emigration and immigration had, for all practical purposes, ceased and the population was more or less stable so that the figure obtained on Census night may safely be taken to represent the mean annual population throughout the year.

The enumerated population was less by 66,749 than the estimated population which was 512,468. It was on this latter figure that the weekly mortality tables issued during the first half of the year were based but in July the Census figure was adopted for subsequent returns while a correction figure for those already published was supplied.

Analysis of age distribution tables compiled from the Census returns reveals a very striking discrepancy. Under the age group 0—12 months only 5,165 infants were enumerated. But in 1930 there were 17,702 births and in the same year there were 3877 deaths of infants under one year of age. There should, therefore, have been approximately 13,825 infants enumerated in this age group, an apparent deficit in the Census of 8,660. This discrepancy is even more obvious in the age group 1—2 years where only 3,813 children were enumerated, which is manifestly absurd. At first sight it was thought that the Chinese custom of reckoning a child to be one year old when it is born and a year older on each succeeding Chinese New Year might account for the deficit, the children being recorded in the later year groups. A cursory examination of the figures for these later years would appear to give colour to this, as the numbers are markedly greater than in the earlier years but on closer examination it is found that they do not anything like account for those missing.

Accordingly it was decided to hold a check Census in a special district taking particular care to find out the exact ages of all the children under 5 years of age. The total number of children in this category according to the Census Schedules was 1,288 while at the check Census 1952 were enumerated—a difference of 664 or approximately 50%.

As a further check, Survivor tables were worked out. In calculating these the average mortality rates for the previous decade were used. Also to cover the possibility of any of the missing children having been carried over to the 5 to 10 year group those tables were worked out to the latter age. They show that there should have been in the 0—5 group 58,375 children under 5 years of age. The figure obtained from the rough method of applying the figure found at the check census, to the whole area was 55,383. But the actual census figure was only 36,689. There is a difference, therefore, between the survivorship figures and the census figures of 21,686.

That the missing children had not been carried over in any numbers to the 5—10 group is shown by the small difference between the Census

figure for that group which was 39,667 and that obtained by the survivorship method namely 37,278—a difference of 2,389.

Subtracting this excess in the 5—10 group from the deficit found in the 0—5 group we have a total of 19,297 children who, in my opinion, were not recorded in the Census and should be added to our population.

As already stated I intend to use the actual census figure in calculating the statistical tables of this report but in addition I will give corrected figures based on a total population obtained by adding the above figure to the actual Census population namely 465,016.

In future years, however, I propose to add this figure permanently to the population. And while on the subject of vital statistics it will not be out of place to say here that in future I intend to depart from the practice we have used in the past of estimating the population in intercensal years by geometrical progression. In a place like Singapore, the population of which may vary within very wide limits according to the conditions of trade, these methods of estimating the population may be entirely fallacious. In future I intend to use a figure which will be obtained by adding to the figure for the previous year, the natural increase *i.e.* the excess of births over deaths and the proportional increase of immigration over emigration for the whole country. As the Commissioners have practically decided to hold a quinquennial census the figure to be obtained by these methods should not be too far out.

Returning to the actual census figure of 445,719 this was distributed by nationalities as follows.

—				Males	Females	Total
Europeans	..	..	..	4,145	2,373	6,518
Eurasians	..	..	..	2,929	3,205	6,134
Chinese	..	..	..	214,618	125,996	340,614
Malays	..	..	..	23,481	19,892	43,373
Indians	..	..	..	34,871	6,485	41,356
Others	..	..	..	4,442	3,282	7,724
				284,486	161,233	445,719

The following return gives the population, the number and rates per 1,000 births infantile deaths, and deaths at all ages for the past 10 years:—

Year			Population	Births		Infantile Deaths		Deaths at all ages	
				No.	Rate	No.	Rate	No.	Rate
1921	..	..	351,461	10,237	29.12	2,383	232.7	11,947	33.99
1922	..	..	362,597	10,368	28.59	2,488	239.9	11,553	31.86
1923	..	..	373,513	10,757	28.79	2,431	225.9	10,049	26.90
1924	..	..	384,758	11,757	30.55	2,614	222.3	10,420	27.08
1925	..	..	396,341	12,363	31.19	2,600	210.3	11,184	28.21
1926	..	..	408,273	12,871	31.52	2,987	232.0	13,085	32.04
1927	..	..	428,153	14,152	33.05	3,221	227.6	14,165	33.08
1928	..	..	442,454	15,540	35.12	3,142	202.1	12,584	28.44
1929	..	..	479,723	17,551	36.58	3,467	197.5	12,576	26.21
1930	..	..	495,818	17,702	35.70	3,877	219.0	13,748	27.73
Average for 10 years			412,309	13,328	32.02	2,921	220.9	12,131	29.55
1931	..	..	445,719	16,488	36.99	3,369	204.3	11,233	25.2

I. BIRTHS.

The total number of births registered during the year was 16,488 compared with 17,702 in 1930 and 17,551 in 1929.

There were 8,644 males and 7,844 female births.

The crude birth rate was 36.99 per mille as compared with 35.70 in 1930 and 36.58 in 1929.

The following return gives the number of births and the birth rate for each month of the year.

MONTH .	Births	Birth Rate	MONTH	Births	Birth Rate
January ..	1,382	32.36	July ..	1,358	31.80
February ..	1,205	28.22	August ..	1,394	37.53
March ..	1,413	33.09	September ..	1,349	36.31
April ..	1,332	31.19	October ..	1,449	39.01
May ..	1,354	31.71	November ..	1,548	41.67
June ..	1,361	31.87	December ..	1,343	36.15

The following return shows the number of births for each nationality.

—	Males	Females	Total
Europeans	84	90	174
Eurasians	107	93	200
Chinese	6,954	6,275	13,229
Malays	926	832	1,758
Indians	460	457	917
Others	113	97	210
	8,644	7,844	16,488

There were 493 Still Births compared with 483 in 1930 and 547 in 1929.

II. DEATHS.

The total number of deaths for the year was 11,233 and the death rate 25.20 per 1,000 compared with 27.73 in 1930 and 26.21 in 1929.

376 persons died who had been less than 3 months resident in Singapore. Deducting these the death rate is reduced to 24.35.

The excess of births over deaths was 5,255.

The following return shows the number of deaths and the death rate for each month of the year:—

MONTH	Deaths	Death Rate	MONTH	Deaths	Death Rate
January ..	1,022	27.51	July ..	932	25.09
February ..	850	22.88	August ..	956	25.73
March ..	835	22.48	September ..	838	22.56
April ..	970	26.11	October ..	796	21.43
May ..	1,258	33.86	November ..	822	22.13
June ..	1,041	28.02	December ..	913	24.58

The death rates for the different nationalities were:—

	1931			1930		
	Males	Females	Total	Males	Females	Total
Europeans	6.93	5.84	6.53	10.70	10.67	10.69
Eurasians	20.49	12.65	16.38	17.51	16.95	17.21
Chinese	27.38	25.56	26.78	30.07	26.29	28.71
Malays	26.74	26.12	26.48	31.32	29.65	30.53
Indians	14.27	34.45	17.49	20.52	36.46	23.32
Others	16.17	14.27	15.34	9.63	7.39	8.63
Total ..	25.18	25.24	25.19	28.49	26.36	27.73

CORRECTED DEATH RATE.

If we use the figure of population mentioned under Statistics, obtained by adding to the actual Census figure the number of unrecorded children, the corrected death rate becomes 24.15.

The following return gives the number of deaths from each cause of disease by nationality, sex and age. The classification followed is that of the International List (1926):—

I. General Diseases.		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
1. Enteric Fever.	1a. Typhoid fever.	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	66-18
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	56	13	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	2	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7	0	
2. Typhus Fever.	1b. Paratyphoid fever.	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	2-0
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
3. Relapsing Fever.		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
4. Mediterranean Fever.		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
5. Malaria.		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	397-154
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
6. Small-pox.		Eurasians ..	4	2	9	7	14	6	7	4	19	8	42	9	53	30	10	58	12	9	--	--	--	--	--	--	1	3	1-0
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	344	132	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	14	9	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28	10	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7	2	
7. Measles.		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3-2
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carried forward ..		Others ..	4	2	13	9	17	15	8	15	12	8	25	11	65	15	99	36	69	13	17	11	--	--	--	469	174	469-174	

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

(10-D)

[illegible]

I. General Diseases—(contd.)		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
13. Mumps.		Brought forward ..	11	6	34	26	36	30	13	21	17	10	26	14	72	19	152	50	109	38	77	19	22	19	--	--	569	252	569—252	
			Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
14. Asiatic Cholera.			Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
15. Cholera nostras.			Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16. Dysentery.	16a. Amoebic.		Chinese ..	--	--	--	--	--	2	--	--	--	1	--	2	1	8	--	16	--	20	1	9	1	--	--	1	0	62—5	
			Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--		5
			Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	2	--	--	--	--	--	--	--	--		0
			Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		0
			Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
16b. Bacillary.			Europeans ..	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	62—5	
			Eurasians ..	1	--	--	--	--	--	--	--	--	--	--	--	--	5	--	15	--	19	--	16	1	9	2	1	1		4
			Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--		--
			Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	3	--	--	--	--	--	--	--	--	--		--
			Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
16c. Other or unspecified.			Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	73—7	
			Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Chinese ..	1	1	3	5	15	12	--	--	2	1	2	2	--	9	5	25	11	50	16	46	8	40	13	--	197		76
			Malays ..	--	--	1	--	--	--	--	--	--	--	--	1	--	--	--	2	1	1	--	2	--	--	--	3	1		1
17. Plague.	17a. Bubonic.		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	206—79	
			Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
17b. Pneumonic.			Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	206—79	
			Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
			Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
Carried forward ..			13	7	38	32	52	42	17	25	19	11	31	16	89	25	208	62	198	56	163	31	82	36	--	--	910	343	910—343	

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR, 1931.

I. General Diseases—(contd.)													Nationality.		Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals								
													M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F							
17. Plague (Continued)													Brought forward ..		13	7	38	32	52	42	17	25	19	11	31	16	89	25	208	62	198	56	163	31	82	36	--	--	910	343	910—343								
17c. Septicæmic.													Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--						
													Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--				
													Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
													Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
													Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
													Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
17d. Not otherwise defined.													Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--				
													Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
													Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
													Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
													Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
													Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
18. Yellow Fever.													Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
													Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
													Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
													Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
													Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
													Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19. Spirochaetosis ictero— haemorrhagica.													Europe																																				

I. General Diseases—(contd.)																												Grand Totals																										
Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL																													
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F																												
23. Encephalitis lethargica.	Brought forward ..		14	8	38	33	52	42	17	25	19	11	31	16	89	25	209	62	199	57	165	31	82	36	--	--	915	346	915—346																									
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																										
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																										
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																										
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																										
24. Meningococcal meningitis.	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0—1																									
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																										
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																										
	Eurasians ..	--	--	--	1	--	--	--	--	--	--	1	--	--	--	--	2	--	--	1	--	--	--	--	--	4	1	0																										
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	1	--	--	--	--	--	--	1	0	0																										
25. Other epidemic and endemic diseases.	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	1	0	6—1																									
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																								
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																								
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																								
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																								
(1) German Measles.	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																									
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
(2) Varicella.	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																									
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
(3) Other diseases included under 25.	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																									
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	1	0	0		0																							
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	1	0	0		0																							
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	2	0	0		0																							
26. Glanders.	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4- 0																								
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
27. Anthrax.	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																									
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
28. Rabies.	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--																									
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--																							
Carried forward ..																												14	8	38	34	52	42	17	25	19	11	32	16	94	26	211	62	200	57	166	31	82	36	--	--	925	348	925—348

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

I. General Diseases—(contd.)			Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals		
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		M	F
29. Tetanus.		<i>Brought forward</i> ..		14	8	38	34	52	42	17	25	19	11	32	16	94	26	211	62	200	57	166	31	82	36	--	--	925	348	925—348		
			Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--
			Eurasians ..	37	29	--	--	--	1	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	44	30		--	
			Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--
			Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--
30. Mycoses.	(1) Actinomycosis.	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	44—30	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
	(2) Other mycoses.	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1—3	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
31. Tuberculosis of the respiratory system.		Chinese ..	--	--	4	2	6	6	2	4	1	1	11	10	42	24	186	58	200	74	245	44	95	17	--	--	792	240	947—315			
		Malays ..	--	1	--	--	1	--	--	1	--	2	2	8	4	22	5	2	14	14	21	2	6	2	--	--	63	51		--		
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9	1	21	2	5	--	--	--	70	14		--		
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6	--	1	1	2	--	--	--	10	6		--		
		Europeans ..	--	--	--	--	--	--	--	--	--	--	1	2	5	1	--	--	3	1	--	--	--	1	--	--	2	0		--		
32. Tuberculosis of the central nervous system.		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21—15	
		Chinese ..	--	--	1	2	5	7	2	4	2	--	--	1	--	--	--	--	1	--	1	--	3	--	--	--	16	15	--			
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5	0	--		
33. Tuberculosis of intestines and peritoneum.		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5—5	
		Eurasians ..	--	1	--	--	--	--	--	--	--	--	1	--	--	--	--	--	1	--	2	--	1	--	--	--	--	4	5	--		
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
34. Tuberculosis of vertebral column.		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1—2	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Eurasians ..	--	1	--	--	--	1	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	1	2	--		
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
35. Tuberculosis of joints.		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2—1	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	0		
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--		
	<i>Carried forward</i> ..	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,946—719	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
		Eurasians ..	51	40	43	38	64	57	24	33	26	13	55	32	154	62	437	153	437	148	462	85	193	78	--	--	1,946	719	--			

I. General Diseases—(contd.)		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
36. Tuberculosis of other organs.	a. Skin and subcutaneous tissues.	Brought forward ..	51	40	43	38	64	57	24	33	26	13	55	32	154	62	437	153	437	148	462	85	193	58	--	--	1,946	719	1,946—719
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	b. Bones.	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1—0
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	1	0	--
37. Disseminated tuberculosis.	c. Lymphatic system.	Malays ..	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	--	0—1
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	1	--
	d. Genito-Urinary system.	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
38. Syphilis.	e. Other sites included under 36.	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	a. Acute.	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	1	--	--	1	--	--	--	--	--	--	--	2	1	1	--	--	--	1	--	--	5	2	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--
b. Chronic or unstated.	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Chinese ..	20	34	6	8	5	3	--	--	--	1	--	--	--	1	--	8	5	20	6	34	2	14	--	--	108	58	--	
b. Chronic or unstated.	Malays ..	1	1	1	1	--	--	--	--	--	--	--	--	--	--	2	--	2	1	--	--	--	--	--	--	6	3	--	
	Indians ..	4	1	1	1	--	--	--	--	--	--	--	--	--	1	--	1	--	1	--	--	--	--	--	--	8	4	--	
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	1	1	--	
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carried forward ..		78	76	55	53	88	69	27	36	27	13	57	32	157	64	453	161	463	155	498	88	209	58	--	--	2,112	805	2,112—805	

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

(16-D)

[illegible]

II. General Diseases not included above—(contd.)

II. General Diseases not included above—(contd.)										Nationality.		Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals			
										M		F		M		F		M		F		M		F		M		F		M		F		M		F					
Brought forward ..										79	80	60	57	89	69	28	36	27	13	59	32	131	65	465	162	478	156	509	91	215	58	--	--	2,170	819	2,170—819					
44. Cancer of the pharynx, etc.										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	1	0	0		0			
										--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	6	1	10	1	30	4	20	7	--	68	13	0		0			
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	1	2	1		2			
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	3	--	--	--	10	0	0		0			
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	1		1		
45. Cancer of the peritoneum, intestines, and rectum.										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	2	--	--	--	9	0	0		0			
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	1	0	0		0			
46. Cancer of the female genital organs.										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
47. Cancer of the breast.										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
48. Cancer of the skin.										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
49. Cancer of other or unspecified organs.										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
50. Tumours not returned as malignant.										--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
51. Rheumatic Fever.										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carried forward ..										79	80	60	58	90	71	28	36	27	13	59	32	163	66	481	164	505	171	554	111	244	84	--	--	2,290	886	2,290—886					

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

(18-D)

[illegible]

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

II. General Diseases not included above—(contd.)		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
61. Diseases of the parathyroid glands. (Continued).	(2) Other diseases of the parathyroid glands.	Brought forward ..	86	83	61	58	97	74	29	40	28	13	85	44	225	82	631	219	635	216	661	138	296	104	--	--	2,834	1,071	2,834—1,071
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
62. Diseases of the thymus.		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
63. Diseases of the adrenals.		Malays ..	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	0
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
64. Diseases of the spleen.		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
65. Leukaemia, Lymphadenoma.	a. Leukaemia.	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..	1	--	--	--	--	--	--	--	--	--	--	1	--	--	--	2	--	1	1	--	--	--	--	--	5	--	2
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
66. Alcoholism.	b. Lymphadenoma.	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67. Chronic poisoning by mineral substances.	(1) Occupational lead poisoning.	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carried forward ..			88	83	61	58	97	74	29	40	28	13	86	44	225	82	633	219	636	217	661	138	296	105	--	--	2,840	1,073	2,840—1,073

II. General Diseases not included above—(contd.)										Nationality.	
										Under 3 Months	
										M	F
										3 to 12 Months	
										M	F
										1 to 5 Years	
										M	F
										5 to 10 Years	
										M	F
										10 to 15 Years	
										M	F
										15 to 20 Years	
										M	F
										20 to 25 Years	
										M	F
										25 to 35 Years	
										M	F
										35 to 45 Years	
										M	F
										45 to 55 Years	
										M	F
										Over 55	
										M	F
										Unknown	
										M	F
										TOTAL	
										M	F
										Grand Totals	
										83	83
										61	58
										97	74
										29	40
										28	13
										86	44
										225	82
										633	219
										636	217
										661	138
										296	105
										--	--
										2,840	1,073
										2,840—1,073	
										0—1	
										4—1	
										4—2	
										3—1	
										1—0	
										2—1	
										2,854—1,079	
										95	83
										62	59
										98	76
										29	41
										28	13
										87	44
										226	82
										635	220
										636	218
										662	138
										296	105
										--	--
										2,854	1,079
										2,854—1,079	
										0—1	
										4—1	
										4—2	
										3—1	
										1—0	
										2—1	
										2,854—1,079	
										95	83
										62	59
										98	76
										29	41
										28	13
										87	44
										226	82
										635	220
										636	218
										662	138
										296	105
										--	--
										2,854	1,079
										2,854—1,079	
										0—1	
										4—1	
										4—2	
										3—1	
										1—0	
										2—1	
										2,854—1,079	
										95	83
										62	59
										98	76
										29	41
										28	13
										87	44
										226	82
										635	220
										636	218
										662	138
										296	105
										--	--
										2,854	1,079
										2,854—1,079	
										0—1	
										4—1	
										4—2	
										3—1	
										1—0	
										2—1	
										2,854—1,079	
										95	83
										62	59
										98	76
										29	41
										28	13
										87	44
										226	82
										635	220
										636	218
										662	138
										296	105
										--	--
										2,854	1,079
										2,854—1,079	
										0—1	
										4—1	
										4—2	
										3—1	
										1—0	
										2—1	
										2,854—1,079	
										95	83
										62	59
										98	76
										29	41
										28	13
										87	44
										226	82
										635	220
										636	218
										662	138
										296	105
										--	--
										2,854	1,079
										2,854—1,079	
										0—1	
										4—1	
										4—2	
										3—1	
										1—0	
										2—1	
										2,854—1,079	
										95	83
										62	59
										98	76
										29	41
										28	13

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

(22-D)

[illegible]

III. Diseases of the Nervous System and Sense Organs—(contd.).			Nationality.		Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
75. Paralysis of unstated origin. (Continued).	b. Other forms of paralysis.	Brought forward ..	97	85	69	63	105	79	29	41	28	14	88	45	230	84	649	221	650	225	692	150	329	133	--	--	2,966	1,140	2,966—1,140			
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
			--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	5		--	2	--
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
76. General paralysis of the insane.			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5—2	
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
77. Other forms of insanity.			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2—0	
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
78. Epilepsy.			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2—0	
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
79. Convulsions (non puer-peral 5 years and over).			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2—2	
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
80. Infantile convulsions (under 5 years of age).			1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	1	0	6—2	
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	478	405	--		
			61	46	61	50	23	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	145	117	--	--		
			11	7	6	6	6	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23	18	--	--		
			--	--	1	--	1	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	3	--		--
81. Chorea.			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	650—543	
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
82. Hysteria and neuritis.	(1) Hysteria, Neuralgia.		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,631—1,689	
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Carried forward ..			365	292	331	271	225	207	35	44	29	14	89	45	231	84	649	222	651	225	694	150	332	135	--	--	3,631	1,689	3,631—1,689			

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

III. Diseases of the Nervous System and Sense Organs—(contd.).		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
82. Hysteria and neuritis. (Continued).	(2) Neuritis.	Brought forward	335	232	331	271	225	207	35	44	29	14	89	45	231	84	649	222	61	225	694	150	332	135	--	--	3,631	1,689	3,631—1,689
		Europeans	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--	--	1	0	
		Malays	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	2	--	2	--	--	2	6	--	--	2	6	
83. Cerebral softening.		Indians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	3—7
		Others	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	2	0	
84. Other diseases of the nervous system.	(1) Idiocy, Imbecility.	Malays	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2—0
		Indians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	(2) Cerebral tumour.	Chinese	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	0—1
		Malays	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	
	(3) Disseminated sclerosis.	Eurasians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4	0	4—1
		Chinese	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	(4) Paralysis agitans.	Europeans	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1—0
		Eurasians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	
		Chinese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	(5) Other diseases included under 84.	Others	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1—1
		Eurasians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	1	1	
		Malays	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
85. Diseases of the eye and annexa.		Europeans	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1—1
		Eurasians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	
		Malays	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	
		Carried forward	336	293	331	271	225	209	35	44	30	14	89	46	231	86	651	224	655	226	695	152	335	135	--	--	3,643	1,700	3,643—1,700

III. Diseases of the Nervous System and Sense Organs—(contd.).

[illegible]

IV. Diseases of the Circulatory System.

[illegible]

IV. Diseases of the Circulatory System—(contd.).			Nationality.		Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals			
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
90. Other diseases of the heart. (Continued).	(9) Heart disease (undefined).	Brought forward ..	366	293	331	271	226	209	37	44	30	15	93	47	239	91	685	237	695	241	742	169	386	157	--	--	--	--	3,830	1,774	3,830—1,774			
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			1	--	--	--	--	--	--	--	--	--	--	--	--	1	--	3	2	2	2	9	2	4	2	--	--	--	--	1	0	0		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20	8	8	
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	3	1	1	
91. Diseases of the arteries.	a. Aneurysm.	Brought forward ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
	b. Arterio-sclerosis.	(1) Arterio sclerosis with record of cerebral vascular lesion.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
	(2) Arterio sclerosis without record of cerebral vascular lesion.	Brought forward ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
	c. Other diseases of the arteries.	Brought forward ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
92. Embolism and thrombosis (not cerebral).		Brought forward ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
93. Diseases of the veins (Varix, hæmorrhoids, phlebitis, etc).		Brought forward ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
94. Diseases of the lymphatic system.		Brought forward ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Carried forward ..			367	293	331	271	226	209	37	44	30	15	93	48	241	97	692	251	711	250	759	172	412	166	--	--	--	--	3,899	1,816	3,899—1,816			

V. Diseases of the Respiratory System—(contd.).

V. Diseases of the Respiratory System—(contd.).										Nationality.									
99. Bronchitis.	a. Acute bronchitis.	Brought forward .																	
		Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
100. Broncho-pneumonia.	b. Chronic bronchitis.	Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
		Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
101. Pneumonia, not lobar, or otherwise defined.	c. & d. Bronchitis not distinguished as acute or chr.n.c.	Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
		Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
102. Pleurisy.	a. Lobar pneumonia.	Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
		Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
102. Pleurisy.	b. Pneumonia not otherwise defined.	Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
		Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
102. Pleurisy.	1. Empyema.	Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
		Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
102. Pleurisy.	2. Other pleurisy.	Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
		Europeans .. Eurasians .. Chinese .. Malays .. Indians .. Others ..																	
Carried forward ..										Grand Totals									

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

V. Diseases of the Respiratory System—(contd.).		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
103. Congestion and hæmorrhagic infarct of lung.	<i>Brought forward</i> ..	Europeans ..	487	379	601	489	485	448	79	91	36	26	112	56	279	109	797	287	841	283	858	199	477	200	--	--	5,052	2,567	5,052-2,567	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	1	--	--	4	0	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
104. Gangrene of the lung.		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4-1	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	1	--	--	--	--	--	--	--	--	3	0	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	1	0	4-0	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
105. Asthma.		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	1	--	1	3	--	--	--	--	--	--	--	--	1	--	2	2	4	2	7	3	4	5	--	18	15	--	26-19	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	4	0	
106. Pulmonary emphysema.		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2-0	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
107. Other diseases of the respiratory system.	<i>a. Chronic interstitial pneumonia including occupational diseases of the lung.</i>	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	<i>b. Diseases of the mediastinum.</i>	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0-1	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	<i>c. Other diseases included under 107.</i>	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	1	0	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9	0	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0	13-0
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--
VI. Diseases of the Digestive System.																														
108. Diseases of the buccal cavity and annexa.	(1) Diseases of the teeth and gums.	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	1	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	2	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2-2	

MORTALITY ACCORDING TO DISEASE, AGE AND SEX FOR THE YEAR 1951.

[illegible]

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

VI. Diseases of the Digestive System—(contd.).		Nationality	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals		
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			
112. Other diseases of the stomach. (Continued).	2. Other diseases included under 112.	Brought forward .		520	398	623	518	492	457	82	92	36	27	112	57	284	109	816	290	866	286	880	204	489	211	--	--	5,194	2,649	5,194—2,649	
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..		1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--	--
		Chinese ..		3	--	1	--	--	1	--	--	--	--	--	--	--	--	--	--	1	3	2	--	4	2	3	--	9	11	--	--
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
113. & 114. Diarrhœa and enteritis.	(1) Ulceration of the intestines.	Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	(2) Colitis.	Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..		--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..		1	2	12	7	25	18	1	4	--	--	--	--	--	1	--	--	--	1	--	--	1	1	--	--	40	35	--	--
		Malays ..		--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	2	--	--
	(3) Other diseases included under 113 & 114.	Indians ..		1	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--	--	
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..		1	--	1	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	--	--
		Chinese ..		115	70	132	119	85	60	9	8	--	--	--	--	1	--	--	--	2	3	1	4	1	2	3	--	353	262	--	--
115. Ankylostomiasis.		Malays ..		11	5	10	12	--	6	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	23	29	--	--	
		Indians ..		--	4	6	3	1	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11	13	--	--	
		Others ..		1	--	1	--	--	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	3	--	--	
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
116. Diseases due to other intestinal parasites.	a. Cestodes, (hydatids of liver excepted).	Chinese ..		--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	1	1	--	--	--	--	--	1	3	--	--	
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	--	
		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	--	--	
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	b. Trematodes.	Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--											

MORTALITY ACCORDING TO DISEASE, AGE AND SEX FOR THE YEAR 1931.

[illegible]

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

[illegible]

VI. Diseases of the Digestive System—(contd).		Nationality.		Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals		
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			
127. Other diseases of the digestive system.		Brought forward ..		664	488	792	664	611	555	98	109	39	27	117	58	292	112	847	299	913	298	919	218	517	231	--	--	5,809	3,059	5,809—3,059		
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VII. Non-Venereal Diseases of the Genito-Urinary System and Annexa.		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
128. Acute nephritis. (Including unspecified under 10 years of age.)		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
129. Chronic nephritis. (Including unspecified over 10 years of age.)		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
130. Chyluria.		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
131. Other diseases of the kidney and annexa.		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
132. Calculi of the urinary passages.		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
133. Diseases of the bladder.		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1. Cystitis.		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Eurasians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carried forward ..		Chinese ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Malays ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Indians ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Others ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Europeans ..		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6,111—3,228		TOTAL		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		
		Grand Totals		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		
		Grand Totals		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		
		Grand Totals		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		
		Grand Totals		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		6,111—3,228		6,111		3,228		

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

VII. Non-Venereal Diseases of the Genito-Urinary Systm and Annexa—(contd.).			Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals	
133. Diseases of the bladder. (Continued).	2. Other diseases of the bladder.	M		F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M		F
134. Diseases of the urethra, urinary abscess, etc.	a. Stricture of the urethra, etc.	Brought forward ..	664	488	794	665	617	556	101	112	46	29	120	62	302	121	875	332	961	336	1,018	251	613	276	--	--	6,111	3,228	6,111—3,228		
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--
135. Diseases of the prostate.	b. Other diseases of the urethra.	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
136. Non-venereal diseases of the male genital organs.		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
137. Cysts, and other tumours of the ovary not returned as malignant.		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
138. Salpingitis and pelvic abscess in females.	1. Salpingitis.	Eur Asians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	2. Pelvic abscess in females.	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carried forward ..			664	488	794	665	617	556	101	112	46	29	120	62	302	121	875	332	961	336	1,018	251	613	276	--	--	6,111	3,228	6,111—3,228		

VII. Non-Veneral Diseases of the Genito-Urinary System and Annexa—(*contd.*).

[illegible]

VIII. The Puerperal State.

143. Accidents of pregnancy.	a. Abortion.	b. Ectopic gestation.	Number of weeks of pregnancy at time of accident																				Total																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			0-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39	40-41																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	Europeans ..	Europeans

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

[illegible]

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

[illegible]

X. Diseases of the Bones and Organs of Locomotion.—(contd.)

158. Other diseases of the organs of locomotion.

t forward

Europeans
Eurasians
Chinese
Malays
Indians
Others

XI. Congenital Malformations.

1. Congenital hydrocephalus.

Europeans
Eurasians
Chinese
Malays
Indians
Others

2. Congenital malformation of heart.

3. Other congenital malformations.

Europeans
Eurasians
Chinese
Malays
Indians
Others

XII. Diseases of Early Infancy.

160. Congenital debility, sclerema and icterus.

1. Congenital debility and sclerema.

Europeans
Eurasians
Chinese
Malays
Indians
Others

2. Icterus neonatorum.

Europeans
Eurasians
Chinese
Malays
Indians
Others

161. Premature birth, injury at birth.

1. Premature birth.

Europeans
Eurasians
Chinese
Malays
Indians
Others

Carried forward,

6,479—3,658

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

[illegible]

XIV. External Causes.		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals		
			M F		M F		M F		M F		M F		M F		M F		M F		M F		M F		M F		M F		M F				
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		M	F
165 & 166. Suicide by solid or liquid poisons and corrosive substances.	Brought forward ..	Brought forward ..	1,006	788	822	699	623	560	103	115	46	30	120	69	302	134	880	384	964	363	1,025	256	845	498	1	--	6,737	3,896	6,737—3,896		
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	--	--	--	--	--	--	1	2	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
167. Suicide by poisonous gas.		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	0	1	--	1-3	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
168. Suicide by hanging or strangulation.		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	1	2	--	5	2	14	2	9	--	4	1	--	--	34	6	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	--	--	--	--	--	6	0	--	40-6	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
169. Suicide by drowning.		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	1-2
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	1	1	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
170. Suicide by firearms.		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
171. Suicide by cutting or piercing instruments.		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	1	--	1	--	--	2	1	0	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	1	--	--	--	--	1	1	0	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
172. Suicide by jumping from high place.		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--</								

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

XIV. External Causes—(contd.).																													
	Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
174. Suicide by other means.	Brought forward ..	1,006	788	822	699	623	560	103	115	46	31	120	70	305	136	890	388	983	365	1,036	257	850	499	1	--	6,785	3,908	6,785—3,908	
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	1	--	
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
175. Food poisoning.	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0-1	
	Europeans ..	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--	
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
176. Poisoning by venomous animals.	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1-0	
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
177. Other acute accidental poisoning (not by gas).	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	1	1	2	--	1	1	--	--	--	--	--	--	4	4	--	
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4-4	
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
178. Conflagration.	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
179. Accidental burns (conflagration excepted).	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Chinese ..	--	1	1	--	2	2	--	1	--	--	--	--	2	--	2	--	1	1	2	--	1	--	--	--	12	6	--	
	Malays ..	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	13-6	
	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
180. Accidental mechanical suffocation.	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	1	--	1	--	--	--	--	--	--	--	--	--	2	0	2-0	
	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
181. Accidental absorption of irrespirable or poisonous gas.	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	--	
	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1-0	
Carried forward ..		1,006	788	823	699	626	562	104	116	46	32	120	72	309	137	896	389	986	367	1,038	257	851	499	1	--	6,806	3,919	6,806—3,919	

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

[illegible]

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

XIV. External Causes—(contd.)		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
190. Wounds of war.	Brought forward ..	Europeans ..	666	789	823	699	630	562	113	120	51	34	128	74	327	138	921	389	1,011	369	1,039	258	860	505	1	--	6,930	3,937	6,930—3,937	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
191. Execution of civilians by belligerent armies.	Brought forward ..	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
192. Hunger or thirst.	Brought forward ..	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
193. Excessive cold.	Brought forward ..	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
194. Excessive heat.	Brought forward ..	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
195. Lightning.	Brought forward ..	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
196. Electricity (Lightning excepted).	Brought forward ..	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
197. Homicide by firearms.	Brought forward ..	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carried forward ..			1,006	789	823	699	630	562	113	120	51	34	128	75	327	138	924	390	1,012	369	1,039	258	860	505	1	--	6,934	3,939	6,934—3,939	

XIV. External Causes—(contd.)		Nationality.	Under 3 Months		3 to 12 Months		1 to 5 Years		5 to 10 Years		10 to 15 Years		15 to 20 Years		20 to 25 Years		25 to 35 Years		35 to 45 Years		45 to 55 Years		Over 55		Unknown		TOTAL		Grand Totals		
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			
198. Homicide by cutting or piercing instruments.	Brought forward ..	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	1	0	6,934—3,939			
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	0	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
199. Homicide by other means.	Brought forward ..	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	1	0	22—4			
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--
200. Infanticide (under one year).	Brought forward ..	Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
201. Fracture (cause not specified).	Brought forward ..	Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
202. Other and unstated forms of accidental violence, Execution.	Brought forward ..	Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
203. Violent deaths of unstated nature (i.e. accidental, suicidal &c.) and cause.	Brought forward ..	Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
XV. Ill Defined Diseases.		Brought forward ..	Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			Indians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
204. Sudden death.	Carried forward ..	Others ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Europeans ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Eurasians ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Chinese ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
		Malays ..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
			1,005	789	823	700	630	563	113	120	51	35	128	75	332	139	944	391	1,020	370	1,064	259	860	505	1	--	6,972	3,946	6,972—3,946		

MORTALITY ACCORDING TO DISEASE, NATIONALITY, AGE AND SEX FOR THE YEAR 1931.

(48-D)

[illegible]

The following return shows the total number of deaths at different age periods in the different nationalities.

		Sex	Under 3 months	3-12 months	1-5 years	5-10 years	10-20 years	20-25 years	25-35 years	35-45 years	45-55 years	Over 55 years	Unknown	TOTALS	
Europeans	..	M	1	1	1	—	1	3	6	5	5	6	—	29}	43
		F	3	—	—	—	—	1	—	3	1	6	—	14}	
Eurasians	..	M	10	4	7	—	6	2	4	6	8	12	—	59}	99
		F	3	5	2	1	1	1	2	5	5	15	—	40}	
Chinese	..	M	797	684	564	108	135	268	765	880	940	735	4	5880}	9098
		F	655	571	490	113	79	93	301	310	204	402	—	3218}	
Malays	..	M	151	113	59	9	17	27	66	60	49	78	—	629}	1150
		F	96	107	58	8	21	23	65	43	32	68	—	521}	
Indians	..	M	51	35	28	5	19	34	115	76	81	59	—	503}	732
		F	31	29	43	2	10	17	30	21	21	25	—	229}	
Others	..	M	8	9	7	1	4	2	2	12	5	14	2	66}	111
		F	3	2	7	2	2	5	4	3	9	8	—	45}	
Total	..	M	1018	846	666	123	182	336	958	1039	1088	904	6	7166}	
		F	791	714	600	126	113	140	402	385	272	524	—	4067}	
Grand Total	..	--	1809	1560	1266	249	295	476	1360	1424	1360	1428	6	11233	

GENERAL DEATH RATE.

The crude death rate was 25.2 compared with 27.73 in 1930 and with 26.21 in 1929. The corrected figure was, as seen, 24.15 but even the uncorrected figure constitutes a low record for the city.

It is possible, too, that this may be an even greater improvement over the rates for the previous years than the actual figures show. This most certainly applies to the 1930 figure as there is good reason now to believe that the estimated mean annual population for that year was greatly in excess.

With the possible exception of Malaria, however, I do not think the lower rate is to be taken as an indication that Singapore was healthier than usual. Actually, causes were operating to produce the reverse as there was undoubtedly much more privation and even destitution.

In previous reports I have always stressed the fact that it was my belief that Singapore on account of its size, geographical position, hospital facilities, etc. was saddled with deaths that did not belong to it. I think this factor was less in operation than usual as by the middle of the year the slump was having its full effect and most of the decrepits and unfits had been weeded out with a resultant slowing down of the influx of that class into Singapore.

That it was still in evidence, however, may be seen from an analysis of the admissions for Malaria to the Government hospitals. With the notification of these was supplied information as to the addresses, previous residence in Singapore, etc. From this information plus our

knowledge of the Singapore Anopheline breeding grounds we are enabled to give a fair guess as to the proportion of infections contracted in Singapore.

There were in all 1557 cases of Malaria notified and these were classified on the lines above as follows:—

Probable Singapore Infections	..	..	107
Possible	„	„	89
Impossible	„	..	602
Outside Municipal Limits	..	..	552
Insufficient addresses	..	..	207
			<hr/> 1,557 <hr/>

The “Impossible” and “outside limits” cases total 1154 or 74%.

The recorded deaths from Malaria totalled 551. If we apply the same method of analysis to these as to the cases of Malaria we find that approximately 408 of these deaths may be labelled as “external” to Singapore. And I think this is not far from the truth. In other words the drifting into Singapore of the unfits was still in evidence.

Some of the chief causes of death during the year are shown in the following tables. The percentage of these to the total deaths is also shown as are also corresponding figures for the previous year.

—	1931	Percentage of all deaths	1930	Percentage of all deaths
Pneumonias	1,525	13.6	1,714	12.5
Tuberculosis	1,377	12.3	1,622	11.8
Infantile Convulsions	1,193	10.6	1,320	9.6
Diarrhoea and Enteritis	782	6.9	969	7.
Diseases of Early Infancy	658	5.8	905	6.5
Beri-beri	651	5.8	818	5.9
Malaria	551	4.9	1,403	10.2

The Pneumonias and Tuberculosis as usual occupy the first two places in the list and between them account for 25.9% of all deaths. As 1262 of the latter were due to Phthisis, the two are considered together for public health purposes, the reason for their prevalence and spread being for all practical purposes identical viz: close herding in sunless, ill ventilated slums.

In 1930 these two causes of death accounted for only 24.3% of all deaths and at first glance it is difficult to account for the increase in 1931, as with the number of vacant houses available one would have thought that conditions of pure overcrowding at least should have been ameliorated. Actual observation, however, showed this was not the case. Localised overcrowding was if anything worse, the reason being that the slump had brought about a state of poverty I have never before seen in Singapore, and the tendency was to give up the tenancy of existing houses and crowd into the already overcrowded cubicles so as to spread the burden of the rent over a greater number.

During the year the subject of the establishment of Clinics and Sanatoria was again revived. Whilst these institutions would be very valuable in their way they would barely touch the fringe of our problems. They are very desirable for those who can afford them but they are

valueless to the poor workman who has a wife and children to look after, for unless he could be certain they were to be taken care of, he would rather be left alone. He does not even report sick until he is already in extremis.

Ambulant treatment of tuberculosis is of doubtful value at any time. In his case it is useless.

I can do no more than reiterate what I have said in previous reports namely that there is only one economic way of dealing with our problem and that is to attack it at its source and wipe out slums. The intention of the Improvement Trust is to do so but while slum property retains its present inflated values (inflated only because overcrowded) the Trust must move exceedingly slowly. Unless and until some cheaper method of dealing with this class of property can be found these two preventable causes of death must continue to take their terrible toll of lives. In one's more hopeless moments one sometimes prays for another fire of London, but, alas we have a very efficient Fire Brigade.

MALARIA.

There was a very big and a very welcome decrease in the number of deaths from this cause. The decrease I think was common to the whole peninsula. I am afraid I should only be guessing should I try to account for it. In the Singapore Municipal Area we have only one district of which we are afraid, the Kallang Basin, where Ludlowi breeds extensively. It is difficult to control this breeding by temporary measures which are the only ones available to us. During the year under review I have no reason to think that the amount of breeding was much less than in previous years but the fact remains that in the surrounding houses of this district Malaria was distinctly less so that something more than the mere quantitative amount of breeding of the particular mosquito must be a determining factor in the incidence of the disease.

In the rest of the Municipal Area all dangerous Anopheline breeding has been eliminated or is under practical control and the amount of Malaria was negligible.

None of the other causes of death call for any special comment, their rates remaining much the same as in previous years.

INFANTILE DEATH RATE.

The infantile death rate was 204.3 per 1,000 live births, compared with 219 in 1930. This figure, though not the lowest recorded, is still one of which we may justly be proud. For the first time in my experience in Singapore there was abundant evidence that the trade depression was causing real destitution. In the working of our Clinics we came across many instances where parents, no matter how anxious, literally had not the wherewithal to pay for suitable foods for their children. And to do them justice I have always found that Asiatic mothers are only too willing to make any sacrifice for their babies. Owing to the increasing popularity of our Clinics we were enabled to come into touch with these cases easily and quickly, and I do not think there is any question but that we were able to save a good many of them.

The total number of deaths of infants was 3,369. I give below a table showing the chief causes of death—with the 1930 figures for comparison.

		1931	1930
Infantile Convulsions	.. ..	945	1,080
Bronchitis and Pneumonia	.. ..	690	666
Diseases of Early Infancy	.. ..	658	902
Diarrhoea and Enteritis	.. ..	497	720

CERTIFICATION OF DEATHS.

The following return shows the number of deaths, the causes of which were certified by Medicalmen, Inspecting Registrars and the Coroner respectively.—

—	Euro-peans	Eura-sians	Chinese	Malays	Indians	Others	Total
Medicalmen	37	86	6,138	331	465	94	7,151
Registrars	—	9	2,513	797	220	7	3,546
Coroner	6	4	447	22	47	10	536
Total ..	43	99	9,098	1,150	732	111	11,233

This gives a percentage of 63.6 certified by Medicalmen as against 68.2 last year. 31.6 by Registrars as against 28.4 last year, and 4.8 certified by the Coroner as against 3.3 last year.

The percentages for the last 10 years have been as follows:—

—	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
Medicalmen ..	58.2	55.4	58.5	58.7	59.6	63.6	65.1	66.0	68.2	63.6
Registrars ..	35.1	37.3	35.0	33.9	34.1	30.1	28.9	29.1	28.4	31.6
Coroner ..	6.5	7.1	6.3	7.2	6.2	6.2	5.9	4.8	3.3	4.8

V. REGISTRATION OF BIRTHS AND DEATHS.

The numbers registered at the different offices were as follows:—

—	Births	Deaths
Central Office	8,002	6,274
Prinsep Street Office	4,895	2,794
Kreta Ayer Office	2,902	1,805
Joo Chiat Office	689	360
Total ..	16,488	11,233

58 Births and 2 Deaths were registered in the Post Registration Books and the sum of \$269 was received in late registration fees.

During the year it was decided that the three outstations were unnecessary, and accordingly these were closed down. On and after 1st November, all registrations were made at the Central Office in the Municipal Building. It is, of course, open night and day.

VI & VII. ANALYTICAL & BACTERIOLOGICAL LABORATORIES.

Both reports are appended. They are full of interest and should be read in their entirety. Both are records of useful work carefully and scientifically carried out and once again I wish to congratulate the officers in charge of these laboratories on the very high standard of efficiency they have set.

Results from both departments show that the Municipal Water Supply maintained its very high standard of purity throughout the year.

While on the subject of the purity of our water supply, it may not be out of place for me to mention that I am continually being asked, usually by telephone, and sometimes by older residents who ought to know better, whether the water is safe to drink, and whether it ought to be filtered and boiled. My invariable advice is to drink it straight from the tap. On no account should it be boiled. The dripstone filter is a source of danger, while the bacteriological filter, found as it usually is, in unskilled hands, is a snare and a delusion. I should be only too grateful to the Press, should they care to emphasise that Singapore has a water supply that is as pure and safe as the best in England.

As will be seen from the two reports, other articles of food and drink for public consumption were kept under continual surveillance and examination, while a close liaison was maintained between the laboratories and other Municipal activities with, I hope, benefit to the latter.

It is gratifying, too, to note the increasing popularity of the bacteriological laboratory and that the medical practitioners in the town are availing themselves more and more of its up-to-date facilities.

VIII. ANTI MOSQUITO WORK.

Full details will be found in Dr. Dawson's report which is appended.

New Works: New work was carried out or continued in 9 areas. In these, 9,628 yards of main earth drains were cut, 5,690 yards of concrete channel were laid, and 8,446 yards of subsoil pipes were put down.

The total amount spent on all antimosquito work, including the maintenance of existing areas was approximately \$128,700.

During the year 6 maintenance gangs of 20 men each were fully employed on the maintenance of the existing areas, 6 gangs on major new works, 5 gangs on minor new works, and 1 gang on Patrol work in the Katong area. 7 masons and 7 labourers were also constantly employed.

Six field workers were continuously engaged in routine mosquito surveys throughout the Municipal area. They brought 2,592 collections of larvae to the departmental laboratory for identification.

Oiling was carried out systematically throughout the year mainly in the valley of the Singapore River and the Katong area. Approximately 2,000 gallons a month of oiling mixture were used.

With the exception of the basins of the Kallang and Geylang rivers, the drainage of which is a purely engineering problem, I am happy to report that all other major drainage schemes in the Municipal area are practically completed. The anopheline breeding grounds in these have been or will shortly be dealt with by permanent subsoil piping, while the main earth ditches will in time, and as the necessity arises, be replaced by concrete channels. It should be understood that the work done in these areas is antimosquito as well as antimalarial, and that every effort is made to abolish all natural breeding grounds for all mosquitoes.

GUNONG PULAI.

The average daily labour force was 341. There were only 19 cases of malaria which could have been contracted in the Gunong, though several of these had a previous history of malaria. The area now comes under the permanent establishment of the Water Engineer, and I understand from him that it is quite healthy and has been so for several months.

PONTIAN.

The average daily population was 974. The malarial parasite was demonstrated in 38 cases of fever, and though 25 of these had a previous history of malaria, I have taken them all as Pontian infections. This gives a fever rate of only 39 per 1,000 per annum.

Work was practically completed by the end of the year. Indeed the area has already been taken over by the Water Engineer. For some years it will be necessary to watch the bed of the old sand stream very carefully. If it is allowed to silt up the result will be to raise the subsoil level in the old 250 acre swamp below the subsidiary dam. If this is allowed to happen, the results may be disastrous to the permanent labour force. Otherwise there is no reason why Pontian should not, like the Gunong, remain malaria free in future.

IX. SUPERVISION OF MIDWIVES & INFANT WELFARE.

The report of the Lady Medical Officer is appended.

The District Sisters paid 19,860 visits in the course of which they saw 14,766 mothers and 14,238 infants.

During the year, a slight alteration in the routine was adopted. It was felt that the Clinic staff should take over the care of all infants at the earliest possible moment so that the District Sisters now pay only one visit to a baby, handing it over to its respective Clinic immediately that visit has been paid. The condition of the baby is reported to the Clinic Sister who, if it is healthy, arranges for its first Clinic visit on the 10th day after birth. If it is ailing, she will arrange for it to be visited next day if necessary.

District Sisters continue to revisit sick mothers as often and as long as necessary.

Of the mothers seen, 11,470 were housed in cubicles or single rooms.

2,436 mothers were unattended at birth. Whenever found, the two Municipal midwives were sent to visit these cases. The latter also attended 305 cases before and during confinement.

Doctors on the Panel were called in to attend 72 poor cases. The fees were paid by the Commissioners.

MIDWIVES.

The Midwives' Register was brought up to date—all those who had ceased to practise, or who could not be traced being struck off—leaving 312.

Two midwives were brought before the Central Midwives Board for negligence. Both were suspended for six months.

" A " class midwives attended	156 cases
" B " & " C " „ „	10,561 „
Medicalmen and Hospitals	1,050 „
	<hr/>
	11,767 cases
	<hr/>

The total births were 16,488 (108 twin births) so that approximately 72% of all mothers received some kind of skilled attention at the birth of their children.

There were 88 puerperal deaths of which sepsis accounted for 36.

CLINICS.

12,384 new babies were taken on the Clinic registers during the year.

In the Clinics 24,708 consultations were held and in the Districts 87,795 visits were paid.

X. FOOD & MARKETS.

The report of the Market Inspector is appended.

There are now ten Municipal markets. Two new markets were opened during the year, one in Sims Avenue and one in Joo Chiat Road. The opening of the former allowed of the closing of the temporary shelter in Lorong 14, which had never been very satisfactory being more of the nature of a Hawkers' shelter than anything else. The opening of the latter allowed of the closing of two very insanitary private markets, one in East Coast Road and one in Geylang Road.

There is now only one private market left in town—that at Morse Road. It has never been a suitable building for market purposes. Action has been taken with regard to it, however, and plans have been submitted for its reconstruction, which, when completed, should bring it more into line with our own market buildings.

In the markets just over 60 tons of unsound foodstuffs were seized or surrendered, and destroyed.

During the year too it was found possible to give very much more attention to foodstuffs sold in private shops. Four Senior Sanitary Inspectors assisted in this. In time it will become one of the routine duties of all inspectors, who are being specially trained in the work.

FOOD SHOPS, ETC.

Licences were issued for:—

	1931	1930
Eating houses	753	585
Coffee shops	432	451
Meat shops	138	107
Fish shops	2	2
Bakeries	25	21
Cake shops	41	35
Biscuit Factories	3	3
Aerated Water Factories ..	9	10
Milk Vendors	225	235
Cold Drink shops	38	—

That the number of licensed eating houses and coffee shops should increase by 149 in a slump year ought to encourage us in our campaign against the hawker, and in our endeavour to get him to go into sanitary premises. It bears out what I have always said that if the hawker is discouraged, *bona fide* licensees will open shops, if they can be reasonably certain of a little profit and are not subjected to unfair competition.

During the year a Hawkers' Committee was set up to go fully into the vexed question of hawkers. The report and recommendations are still with Government. I understand there is every likelihood that some definite programme will be adopted.

The licencing of the last on the list was found necessary on account of the great number of soda water fountains that were springing up all over the town. They were being housed as a rule in premises that were quite inadequate and also insanitary. In many cases the fittings were unsuitable and sometimes even dangerous, so that it was deemed advisable to have some measure of control over them.

XI. PLACES OF PUBLIC RESORT.

Theatres, Hotels, Public Houses, etc. were regularly inspected and reports made to the licencing authorities concerned.

XII. SLAUGHTER HOUSES.

During the year 268,384 animals were received for slaughter. These were as follows. The 1930 figures are given for comparison:

	1931	1930
Pigs	226,807	235,576
Sheep	26,871	30,173
Goats	3,809	7,076
Oxen	10,599	15,619
Buffaloes	298	441
	<hr/> 268,384 <hr/>	<hr/> 288,885 <hr/>

1,049 carcasses were totally condemned, 1,038 of them being pigs. Of these latter, 25 were suffering from tuberculosis, 780 from *Cysticercus Cellulosae* (Measles) and 130 from Swine fever.

There was evidence of tuberculosis in the carcasses of 97 oxen and in 1,603 pigs.

Early in the year the reconstruction of Jalan Besar Abattoir was completed and thereafter all slaughtering of sheep and oxen was conducted there. Pulau Saigon Abattoir was in use for a few months longer as a Pig Dépôt, and was finally closed down when a new Dépôt had been constructed near the French Road Pig Abattoir toward the end of the year.

Late in the year an electrical stunning apparatus for use in the Pig Abattoir was ordered from home. It has been tried out this year and seems to be a great success. It is likely that its extended use will be justified in the Pig Abattoir and possibly later in the other Abattoirs.

XIII. OFFENSIVE TRADES.

421 licences, mostly for laundries, were issued during the year—the fees amounting to \$2,296.43.

There were several complaints of smoke nuisance caused by the sawmills in Kallang Road. It is not really a smoke but a grit nuisance. Several of the sawmills have installed smoke-washing and grit-arresting apparatus, but for many reasons these have not been too successful. The various experts differ, but one fact they all seem agreed upon is that to instal a successful apparatus would involve an amount of reconstruction of these old factories that is hardly justifiable.

There is under discussion at the moment, the question of the introduction of fresh legislation modelled on the most recent Smoke Abatement Act at home. This, if passed, will enable us to deal with this nuisance much more easily than is the case at present.

I mentioned last year, when discussing cowsheds and dairies, that we were at last convinced that no matter what precautions we take, the native milkman cannot be trusted or trained to handle fresh milk in a sanitary manner. I am more than ever convinced of the truth of this and, as he cannot be put out of business, it remains to find some method of protecting his customer. And the only way seems to be by the introduction of compulsory pasteurisation of the fresh milk supplies. I have hesitated to put this forward before as the experts at home seemed to be at variance. The latest Ministry of Health pronouncement, however, is in favour of its introduction and that pasteurisation does practically no harm to the vitamin content. Large towns like Glasgow and Manchester are already seeking powers to introduce compulsory pasteurisation in their respective areas. It is my intention, therefore, to bring up the question of its introduction in Singapore this year.

There is no question, of course, of abolishing any of our requirements with regard to the Cowsheds and Dairies and the care to be exercised therein. That will remain as before.

During the past few years we have been conducting an extensive campaign against the existing dreadfully insanitary cowsheds. We have tried to get the owners to build modern sheds on more suitable sites but it is well nigh impossible to get any co-operation. I am afraid that all our prosecutions (the delinquents call it persecution) have succeeded in doing has been to drive those engaged in the milk trade outside the Municipal limits where, I regret to say, they are erecting the same flimsy, insanitary sheds as before.

It should be understood of course that if compulsory pasteurisation were introduced, the milk could only be accepted (in the Municipal area) if it came from a dairy approved by the Municipal Health Department, wherever situated.

XIV. BURIAL GROUNDS.

The number of burials in Municipal Cemeteries was as follows:—

Bidadari—

	1931	Since opening
Protestant	147	2,993
French Roman Catholic ..	175	3,494
Portuguese Roman Catholic	48	1,249
Pauper	744	11,712

Serangoon Road—

Mohammedan	1,211	8,664
Pauper	124	872

Bukit Brown—

Chinese	590	5,343
Pauper	2,294	8,782

Hindoo Cemetery—

Hindoos	267	1,926
Cremations	101	411
Paupers	101	653

Infectious Diseases—

Serangoon Road	25	684
Yeo Chu Kang Road ..	—	555

Total	5,827	47,338
-------	-------	--------

The Burial Grounds Inspector made 1,780 inspections during the year and attended 90 exhumations.

The total number of burials inside Municipal limits for the year was 7,503, made up as follows:—

—	Bidadari	Bukit Brown	Mohammedan	Hindoo	Infectious	Others	Total
Europeans	50	—	—	—	—	1	51
Eurasians	114	—	—	—	—	1	115
Chinese	885	2,884	5	—	23	1,469	5,266
Malays	—	—	1,062	—	—	40	1,102
Indians	50	—	208	468	2	156	884
Others	15	—	60	1	—	9	85
Total ..	1,114	2,884	1,335	469	25	1,676	7,503

In addition to Municipal cemeteries there are in use 19 Public and 94 Private cemeteries. Practically all of these are for Chinese.

XV. STAFF.

Dr. Dawson went on special leave to England in February returning in September, Dr. Canton returned from furlough in April and Dr. Gilmour in August. Mr. Wilson, Abattoir Superintendent, went on long leave in March and Mr. McMorine, Divisional Sanitary Inspector, in April.

Sanitary Inspectors Lee Kwong Soon, J. L. da Silva and K. C. Mitra, after being seconded for six months to attend the local school, were successful in obtaining the diploma of the Royal Sanitary Institute.

HEALTH OF MUNICIPAL SUBORDINATE STAFF.

The number of cases of sickness treated was 16,600. There were 965 sent to hospital and 150 to various Clinics. 24,677 days sick leave were granted, 17,645 dressings were applied in the Dispensary where the daily attendances totalled 38,119. Private practitioners treated 388 and the Medical Officer in charge of staff paid 162 visits to patients in their homes.

XVI. GENERAL.

There were 1,759 notices, including 273 intimations, served during the year, which, with 706 from the previous year made a total of 2,465. Of these, 1,976 were complied with and 108 cancelled.

There were 113 arrest cases, mostly for selling milk without a licence, and for unlawfully slaughtering pigs.

There were 20,599 visits of inspection paid by the Sanitary Inspectors. 2,082 prosecutions with 1,629 convictions, with fines imposed amounting to \$13,435.50 while 171 prosecutions were withdrawn, and 282 summonses could not be served.

The following reports and returns are appended:—

- Anti Mosquito Report.
- Report of the Analyst.
- Report of the Bacteriologist.
- Report of the Lady Medical Officer.
- Report of the Superintendent Middleton Hospital.
- Report of the Market Inspector.
- Return of Inspectors' prosecutions.
- Return of notices.
- Summary of arrest cases.
- Return of licences for Offensive Trades.

I conclude by recording my grateful thanks to all members of the department, both senior and subordinate, for their continued loyal support.

I have the honour to be,

Sir,

Your obedient servant,

P. S. HUNTER,

M.A., M.B., Ch.B., D.P.H.

Municipal Health Officer.

MUNICIPAL HEALTH OFFICE,

Singapore, 14th January, 1932.

THE MUNICIPAL HEALTH OFFICER.

SIR,

I have the honour to forward the following report on Anti-mosquito measures carried out in the Municipal Area during the year 1931.

ANTI-MALARIAL WORKS.

New works were carried out in the following areas in all of which breeding places of malaria carrying anopheline mosquitos were found.

(1)	Area	No. 119	Scott's Road.
(2)	„	No. 120	Kim Seng Road.
(3)	„	No. 121	Alexandra Road—Hock Ann Brick Factory Ravine.
(4)	„	No. 122	Alexandra Road 4th Mile Ravine.
(5)	„	No. 124	Alexandra Road Cemetery Ravine.
(6)	„	No. 125	Mount Faber Ridge Ravine.
(7)	„	No. 126	Temple Ravine.
(8)	„	No. 127	Henderson Road—West Ravine.
(9)	„	No. 129	Sungei Namly Ravine.

(1) **Area No. 119 Scott's Road.** Seepages at the foot of the hill at Mount Elizabeth near the Goodwood Park Hotel were drained by laying 405 feet of five-inch subsoil pipes and 232 feet of nine-inch open invert channel.

(2) **Area No. 120 Kim Seng Road.** Seepages at the foot of the hill below Panglima Prang were drained by laying 200 five-inch subsoil pipes.

(3) **Area No. 121.** This area comprises a ravine draining to the Singapore River near the Tanglin Road—Alexandra Road junction. This ravine in its lower reaches runs parallel to Alexandra Road as far as the approach road to the Hock Ann brick works where it turns south and divides into three smaller subsidiary ravines having their origin on the northern slopes of Mount Faber Ridge. The whole area was cleared of undergrowth and trees in the line of the main drainage channels were removed. A deep main drain was cut at a distance of four chains from and running parallel to Alexandra Road as far as the Hock Ann brick works and was continued from that point to the subsidiary ravines. During the work, 130 ponds were drained, 446 trees felled, 14 wells closed, and the ravine floors levelled and regraded.

3,344 yards of main earth ditch were cut. Seepages at the heads of the subsidiary ravines were trapped by subsoil pipes and led to discharge to the main earth ditch.

2,135 five-inch subsoil pipes and 1,263 eight-inch pipes were laid.

(4) **Area No. 122.** This area comprises a ravine situated on the north side of and running parallel to Alexandra Road. The head of the ravine is at the Ayer Rajah Road—Alexandra Road junction and this section which is in the Rural Board Area, was drained some years ago by the Government Health Department.

The lower portion of the ravine is in the Municipal Area and was cleared of undergrowth and drained by a main earth ditch discharging at a culvert under Alexandra Road.

20 trees were felled, three wells closed, and the area levelled off.

The main earth drain is 264 yards in length. (5) (6) (7) and (8). Areas Nos. 124, 125, 126 and 127. These areas comprise ravines on the northern slopes of Mount Faber, all discharging to a common outlet near the Municipal refuse dump in Alexandra Road.

These areas were cleared of undergrowth and drained by main earth ditches.

304 trees were felled, 182 ponds drained and 25 wells closed. Main earth ditches were cut for a distance of 3,691 yards.

Work in ravines No. 126 and No. 127 is still in progress. In ravine No. 125 seepages were drained by laying 146 five-inch and 119 eight-inch subsoil pipes.

(9) Area No. 129. This area comprises a large catchment area on the south side of Bukit Timah Road draining to the Bukit Timah Canal near Cluny Station.

Within Municipal limits the area extends from Bukit Timah Road to the point where the Johore Water Supply pipe line crosses the area. The main stream was straightened, deepened and enlarged for a distance of 1,430 yards. Three subsidiary ravines join the main ravine and in one of these work was commenced. 215 trees were felled and 143 yards of earth ditch were cut.

Work is in progress.

MAINTENANCE OF EXISTING WORKS.

Extensions and repairs to existing works were carried out in the following areas:—

Area No. 10 Fernhill. An earth drain running along the roadside was replaced by a nine-inch concrete invert drain for a distance of 1,047 feet.

Area No. 14 Watten Estate. The main line of subsoil pipes in Ravine No. 2 was taken up and replaced by an open concrete invert channel. A large number of old cement subsoil pipes which has collapsed were replaced by fired clay pipes.

1,390 feet of eighteen-inch concrete channels, 106 feet of twelve-inch concrete channels, 167 eighteen-inch concrete revetment slabs, 1,417 five-inch subsoil pipes and 127 four-inch subsoil pipes were laid.

Area No. 19 Harbour Board Ravine. 1,125 five-inch subsoil pipes were laid to drain seepages behind the coolie lines. Seepages behind the servants' quarters were dealt with by building a retaining wall 2½ feet high and 56 feet in length at the foot of the embankment. Subsoil pipes were laid behind the wall and below the invert of a solid concrete drain. 1,880 five-inch subsoil pipes were laid.

Area No. 35 Tiong Bahru. 309 five-inch subsoil pipes were laid to drain seepages on Improvement Trust property behind the Medical College Hostel and a further 1,260 feet of eight-inch pipes were laid to drain seepages at the toe of the hill below the cemetery at Bukit Ho Swee. A section of earth drain was replaced for a distance of 749 feet by a twelve-inch concrete channel drain.

Area No. 36 Wishart Ravine. The main temporary drain throughout the whole extent of this ravine was replaced by a permanent concrete channel drain. In the middle of the ravine, where the stream cascades over a steep bank, a solid concrete drain was constructed with five vertical steps of four feet.

The total length of drain laid was as follows:—

Twentyone-inch concrete channels	= 1,988 ft.
Eighteen-inch concrete channels	= 564 „
Eighteen-inch concrete revetment slabs	= 2,526 „
Four-inch subsoil pipes	= 130 „
Five-inch subsoil pipes	= 1,408 „
Eight-inch subsoil pipes	= 100 „

Work is in progress.

Area No. 38 Alexandra Swamp. A large tract of land between the old military rifle range and the Singapore River was cleared of trees and undergrowth. 3,432 trees were felled and stumped. The main earth outlet ditches from Swettenham Road and the rifle range were widened, sloped and turfed.

Area No. 41 Gallop Road. A short length of earth drain in this area was replaced by a twelve-inch concrete invert channel for a distance of 300 feet.

Area No. 54 Tanglin Hill. The existing eighteen-inch concrete channel drain was extended for a distance of 420 feet to the culvert under the new approach road to Improvement Trust Property. 101 eight-inch subsoil pipes were laid to drain seepages.

Area No. 80 Economic Gardens. Ten acres of swampy land between Raffles College and Bukit Timah Road were cleared of thick undergrowth, and the area was drained by cutting 736 yards of earth ditch. Seepages were drained by laying 822 feet of five-inch subsoil pipes.

Area No. 110 McPherson Road. A twelve-inch concrete channel with fifteen-inch revetment slabs was laid behind the Government Bungalows in this area for a distance of 1,034 feet. Seepages were drained by laying 1,522 five-inch subsoil pipes. The earth ditch from the head of the ravine as far as the approach road to the Hindu Cemetery was replaced by a concrete invert channel and seepages were drained by laying subsoil pipes. The culvert under the cemetery approach road was demolished and a new thirtysix-inch diameter Hume pipe culvert was laid at a lower level. The total length of drain laid was as follows:—

Twenty-one inch concrete channel	= 1,614 feet
Eighteen-inch concrete channels	= 1,000 „
Fifteen-inch concrete channels	= 66 „
Nine-inch concrete channels	= 262 „
1,854 five-inch subsoil pipes and 158 eighteen-inch concrete revetment slabs were also laid.	

Area No. 109 Mount Pleasant Ravine. The earth drain in this area was replaced by a concrete channel drain with concrete revetment from the culvert under Giang Thye Road to Kheam Hock Road, and seepages throughout the ravine were drained by subsoil pipes.

The following lengths of drain were laid:—

Twentyone-inch concrete channel with slab revetment	3,936 ft.
Eighteen-inch concrete channel with slab revetment	1,210 „
Nine-inch concrete channel	262 „
Eight-inch subsoil pipe drain	366 „
Five-inch subsoil pipe drain	9,572 „
Twenty wells were closed and 212 trees felled and stumped.	

Area No. 111 Thomson Road. On completion of the new bridge at the Mount Pleasant entrance road, a new line of drain was cut from the head of the Sungei Whampoe to the bridge. Above the bridge an eighteen-inch concrete contour channel was laid for a distance of 890 feet as far as Giang Thye Road. Seven ponds were drained and 885 trees were felled and stumped.

OTHER AREAS.

Routine maintenance work was carried out in all existing anti-malarial areas and on minor repairs in these areas the following materials were used:—

- 43 twenty-one inch concrete inverts.
- 1,399 eighteen-inch concrete inverts.
- 168 fifteen-inch concrete inverts.
- 305 twelve-inch concrete inverts.
- 30 nine-inch concrete inverts.
- 171 eighteen-inch concrete revetment slabs.
- 9 fifteen-inch concrete revetment slabs.
- 1,916 eight-inch subsoil pipes.
- 4,191 five-inch subsoil pipes.
- 1,616 four-inch subsoil pipes.

MOSQUITO SURVEYS.

Systematic surveys were carried out throughout the year and 2,592 collections of mosquito larvae were examined and identified in the laboratory.

GENERAL ANTI-MOSQUITO WORK.

Over 600,000 yards of earth ditches were cleared and regraded by patrol gangs during the year and these gangs also collected and disposed of a monthly average of 1,180 large baskets of empty tins and bottles. Numerous small ponds and wells were also filled.

OILING.

23,973 gallons of anti-malarial mixture were used in spraying mosquito breeding places principally in the Katong district and in the low lying areas adjacent to the Kallang, Geylang and Singapore rivers.

CONTROL OF DOMESTIC MOSQUITO BREEDING.

During the year mosquito larvae were found by Sanitary Inspectors in the course of their rounds in 18.30 per cent of all houses and compounds visited.

289 notices were served under the Destruction of Mosquitos Ordinance.

I have the honour to be,

Sir,

Your obedient servant,

W. DAWSON,

Deputy Health Officer.

SINGAPORE MUNICIPALITY

Twenty-fourth Annual Report

OF THE

MUNICIPAL CHEMICAL LABORATORY

FOR THE YEAR

1931

BY

R. E. WILLGRESS, A.R.C.S., B.SC., A.I.C.

MUNICIPAL HEALTH OFFICE.

CHEMICAL DEPARTMENT,
SINGAPORE,

19th February, 1932.

THE MUNICIPAL HEALTH OFFICER,
SINGAPORE.

SIR,

I have the honour to submit the following report on the work carried out in the chemical laboratory during 1931.

The total number of samples analysed during the year was 16,488, the detailed figures for which are given in the following table.

Public Water Supply	{	Routine samples from Singapore	
		Island	8,900
		Routine samples from Johore ..	2,763
Sewage Purification	{	Samples from Sewage Purification	
		Works, etc.	2,696
		Samples from House Installations ..	422
Foods, Drugs and Miscellaneous Samples	{	From Health Department	1,072
		From Engineering Department ..	340
		From Electrical Department	164
		From Water Department	103
		From Gas Department	20
		From Other Departments	3

MUNICIPAL WATER SUPPLY.

The sources of supply of raw water and general methods of treatment were the same as those given in detail in my last report.

The chemical characteristics of the raw waters were very similar to previous years and the filtered waters were of a satisfactory chemical quality and free from any traces of harmful contamination.

A series of experiments carried out at the end of the year showed that the laboratory tap water has much less solvent action on lead and copper than was the case a year ago. The tap water was left in long lengths of lead or copper piping for varying periods with the following results:—

		Parts per million	
		Lead dissolved	Copper dissolved
After 2 days contact ..	.24		.15
After 4 days contact ..	.28		.4
After 8 days contact ..	.22		.75

The amount of lead dissolved appears to be more or less independent of the time of contact and is below the permissible concentration usually allowed. On the other hand the copper dissolved increases with time of contact although the concentration after 8 days is still very much below the permissible limit.

The chemical characteristics of the various untreated reservoir waters are shown in **Table A** at the end of this report, which gives both averages and ranges of value. It is seen that the raw water from Sultan Ibrahim Reservoir (Pulai II) treated by the rapid sand filters at Pulai, showed very much less variation in iron content than during the previous year. The maximum concentration, in parts per 100,000, was only 0.26 as against 0.80 for 1930 and the average for the year only 0.07 as against 0.25 for 1930.

With the exception of the Pontian Ketchil supply the concentration of solids in the raw waters showed decided decreases over the 1930 values. The increase in solids in the Pontian Ketchil supply, amounting to nearly 50 per cent, was presumably due to the addition of large quantities of lime to the bed of the reservoir.

This table (A) also shows that Peirce Reservoir contains approximately three times as much solid matter in suspension as MacRitchie Reservoir.

As a matter of interest, regular analyses were carried out during the year of samples taken near the main dam at various depths in Sultan Ibrahim Reservoir. The results obtained are shown in **Table B** at the end of this report and are very similar to corresponding results for 1930. It is seen that the iron concentration at 30 feet depth reached as high a value as 1.2 parts per 100,000 and there would have been very great difficulty at the time in treating such water anything like efficiently. Fortunately the water outlet to the filters actually used is much nearer the surface. There should be no difficulty during 1932, however, in treating such a ferruginous water as it can be subjected to aeration and sedimentation before passing to the filters.

The chemical characteristics of the various filtered waters are shown in **Table C** at the end of this report, which gives averages and ranges of value. The chief point of interest in this table is the definite improvement in appearance of all these filtered waters as compared with 1930, particularly the water from Johore. Daily analyses are now carried out of tap waters from three different parts of the Town and the values obtained are shown in this table (C).

The filtered waters from the Island supply were chlorinated as before but the concentration of chlorine used for the last six months of the year was slightly increased at Woodleigh (25% increase) and slightly more than doubled at Bukit Timah Filters. This dosage leaves a small but harmless amount of chlorine in the water several hours after application.

Relatively small amounts of alum added before filtration at Pulai have been sufficient (approximately 0.8 parts per 100,000) and the lime used after filtration has been approximately 0.7 parts per 100,000 (effective concentration).

Table D is of interest as it shows the chemical qualities of the public water supply. The results are similar to those given in the report for 1930 but the new values show a decided drop in the amount of oxidisable vegetable matter. This improvement, particularly with the Island supply, is possibly largely due to the effect of the increased dosage of chlorine.

SEWAGES, EFFLUENTS, ETC. FROM THE MUNICIPAL SEWAGE WORKS.

The Sewage Disposal Works at Alexandra Road treated an average volume of 3,464,300 gallons per day, pumped from the three centres at Albert Street, People's Park and River Valley Road.

This flow is actually 60,000 gallons per day less than the daily average for 1930 but I estimate that the infiltration of subsoil water into the sewers was at least 40,000 gallons per day less during the year under review than during 1930.

The daily volume of sewage treated was, therefore, practically the same for 1931 as for the preceding year.

The whole of this sewage was put through the Detritus and Sedimentation tanks and 76 per cent of the Sedimentation tanks' effluent was finally purified in the percolating filter beds and humus tanks before passing to the Alexandra Road stream. The remaining 24 per cent was partially purified in the bio-flocculation unit and then allowed to mix with the effluent from the 17 filter beds in Blocks A and B before passing through the humus tanks.

Tables E & F, at the end of this report, give the averages and ranges of daily analyses of the crude sewage and of the effluents from the Detritus and Sedimentation tanks and humus tanks.

Crude Sewage. Despite the fact that the total volume of sewage treated has not increased and the number of pails of night soil dumped at the Pumping Stations has increased the strength of the crude sewage has remained practically the same as for the preceding year. The rainfall was slightly higher during 1931 than for 1930.

The lower chloride figure shown in the table (E) indicate less infiltration of subsoil sea water into the sewers.

The crude sewage was neutral in reaction, having an average PH value of 7.0. The solids in suspension contained an average of 85.2 per cent of organic matter.

Detritus Tank. This tank abstracted 9.2 per cent of the solids in suspension in the crude sewage, the monthly percentages ranging from 6.1 to 14.2. These results are an improvement on those of the previous year as less organic matter was abstracted from the sewage treated. The ratio of organic to inorganic matter in the dry sludge from this tank averaged 1.34 to 1.0.

Sedimentation Tanks. The average amount of solids retained in these tanks, taken as a percentage of the solids in suspension in the crude sewage, was 46.7. In view of the presence of dumped night soil in the sewage this result, although low when compared with similar figures for English, etc. units, is quite satisfactory.

The ratio of organic to inorganic matter in the solids freshly settled in these tanks was 5.4 to 1.0 and, after digestion of these settled solids the corresponding values on desludging the tanks, were reduced to 1.54 to 1.0.

Filter Beds. As practically one quarter of the Sedimentation tanks' effluent was treated in the Bio-Flocculation unit, the 38 percolating filter beds had to treat only three quarters of the sewage treated in the previous year. Each bed was rested, on the average, for nearly 12 hours in each 24 hours. As the strength of the sewage treated by the beds has been fairly constant for the last two years it would appear reasonable, therefore, that the efficiency of purification should improve. The monthly averages of the filter bed effluents have shown that the efficiency has not improved for the first six months of the year. This can be seen from **Table G** which gives monthly averages for the Humus tank effluent from the 21 new filter beds in Blocks C and D. These beds were first put into operation about June 1930. These beds were frequently ponding and would, probably, have become less and less satisfactory. The special series of experiments on washing the filter beds, after handpicking, with a strong jet of humus tank effluent which were carried out in 1930 showed so conclusively the improvement to be expected that the necessary pumping plant and distributing gear were at once ordered. The plant was installed and put in operation about June 1931 and the majority of the beds had been washed by August. The monthly figures in **Table G** indicate very clearly the improvement in the quality of the effluent and the filter beds usually showed no traces of ponding for three months after being washed.

The humus tank effluent from the 17 old filter beds comprising Blocks A and B is, of course, less satisfactory in quality than the effluent from the 21 newer beds (Block C and D) because of admixture with the partially purified effluent from the bio-flocculation unit. As soon as the bio-flocculation effluent is pumped to the filter beds for final treatment the quality of all effluents emptying into the Alexandra Road stream should be excellent.

SPECIAL INVESTIGATIONS RELATING TO SEWAGE PURIFICATION.

1. Bio-Flocculation treatment of Sedimentation Tank Effluent.

The history and development of this method of treatment have been given in my previous reports where it was shown that the original method aimed at complete purification of the Sedimentation tanks' effluent. When this was found impossible the unit was altered slightly in construction so that it could act as a method of partial purification only between the Sedimentation tanks and filter beds and thus enable the latter to be worked at much higher rates.

The unit was worked along these lines from October 1930 as explained in my last report, and the conditions of running have not been appreciably altered since that date.

With the exception of one month needed for repairs to the paddle blades, the unit worked continuously throughout the year and treated a daily average of 830,000 gallons of Sedimentation tanks' effluent. The purification effected by this unit is shown in the following table, taken from the average analyses for the year of the Sedimentation tanks' effluent and the bio-flocculation unit effluent.

TABLE SHOWING THE WORKING OF THE BIO-FLOCCULATION UNIT FOR 1931.

Parts per 100,000	'AMMONIA		Oxygen Absorbed in 4 hours	Suspended Matter
	Free	Alb.		
Sedimentation tanks' effluent ..	4.70	.70	6.16	15.2
Bio-Flocculation effluent ..	4.75	.46	3.74	5.5
% Purification	—	34	39	64

With the exception of a small quantity of effluent pumped to a small experimental filter bed, the whole of the effluent from this unit received no further purification beyond passing through the Humus tanks, where it met the effluent from the 17 old filter beds.

This plant has now worked under similar conditions for at least 15 months and, having always given consistently good partial purification, it can be taken as proved that the system is satisfactory and could be worked with success if the sewage, after treatment in this unit, can be put through the filter beds at a much higher rate than that at present possible with ordinary Sedimentation tanks' effluent. This question has been investigated by the use of an experimental filter bed, of practically the same construction as the new filter beds but only one twentyfifth of the size (*i.e.* 20 feet diameter as against the ordinary 100 feet diameter filter bed). Unfortunately this small bed was made with openings in the brickwork sides and, although this may not make any appreciable difference to the purification, it will be advisable in any case to conclude the experiment by passing the bio-flocculation effluent through a large bed, kept specially apart for the purpose.

The small experimental bed was worked continuously for ten months with bio-flocculation effluent, the only condition which was altered during this period being the rate of dosing. Throughout the period the bed was rested for 8 hours in every 24 hours. For the first five months the rate of dosing was 120 gallons per cubic yard of medium per working day and during the second five months 160 gallons. The large filter beds, treating Sedimentation tanks' effluent, were worked during these ten months at roughly 40 gallons per cubic yard per working day, the latter being approximately 11.5 hours. Possibly the large filter beds could be worked longer each day if necessary but I doubt whether the rate of dosing for efficient purification could be higher than 60-70 gallons per cubic yard per day.

It was discovered that this experimental bed became practically covered with a small type of snail which fed on the deposited solids, keeping the bed remarkably clean both on the surface and also inside. These snails do not appear to be able to live in the stronger sewage in the large filter beds.

After passing through the experimental filter the sewage received two hours settlement in a humus tank and the resulting effluent was sampled daily.

The average chemical quality of the effluent from August to the end of the year when the rate of dosage was 160 gallons per cubic yard per day was remarkably good. The values are given in the following table, together with the values for the humus tank effluent from the 21 new beds in Blocks C and D over the same period.

**TABLE SHOWING THE QUALITY OF THE EFFLUENT OBTAINED
BY FILTERING THE BIO-FLOCCULATION EFFLUENT
SEWAGE AT RELATIVELY HIGH SPEED.**

NATURE OF LIQUID TREATED ..				Sedimentation tanks' effluent		Bio-Flocculation effluent	
METHOD OF PURIFICATION ..				21 Filter Beds (C & D) and Humus tank		Experimental filter bed and Humus tank	
NO. OF GALLONS TREATED PER CUBIC YARD PER WORKING DAY ..				44		160	
NO. OF HOURS RESTED PER 24 HOURS				11.3		8	
CHEMICAL RESULTS FOR THE EFFLUENTS				RANGE	AVERAGE	RANGE	AVERAGE
Free Ammonia .. ..				.36/1.0	.62	.30/1.80	.96
Albuminoid Ammonia ..				.04/ .14	.07	.04/ .24	.09
Oxygen absorbed in 4 hours ..				.76/1.40	1.08	.81/1.71	1.23
Suspended matter .. ..				.5 /1.6	.6	.5 /2.6	.7
Chlorides				38/77	57	33/129	58
Nitrates .. ..				.8 /2.0	1.2	1.0 /2.5	1.7
Dissolved oxygen absorbed in 3 days .. ..				.17/ .91	.55	.18/1.09	.64

These results clearly indicate the advantage obtained by subjecting the Sedimentation tanks' effluent to intermediate purification before treatment in the filter beds. The partially purified sewage can be put through a filter bed at nearly four times the rate that the non-partially purified sewage is put through to give nearly the same purification.

The adoption of this system of treatment will probably mean that no extra filter beds need be built as the present 55 beds, including the 17 beds recently constructed, will be able to treat at least ten million gallons per day. If there were no dumped night soil in the sewage it would probably not be necessary to have a bio-flocculation unit at all but it will, presumably, be many years before such a condition occurs.

2. Effect of Night Soil on Settlement of Sewage.

Night soil is dumped at Northern and Southern Pumping stations from 6.30 a.m. to 2 p.m. daily and this arrives at the Alexandra Road Works from about 8 a.m. onwards. In order to determine the effect of this addition to the waterborne sewage a series of experiments were carried out on samples of crude sewage collected at different hours of the day from Alexandra Road and from the three Pumping stations. These samples were, after analysis, allowed to settle in small model Imhoff tanks and small portions of the supernatant liquid were drawn off at regular intervals for analysis. The following table gives a summary of the results obtained.

TABLES SHOWING THE EFFECT OF THE ADDITION OF CRUDE NIGHT SOIL TO WATER-BORNE SEWAGE.

% Settlement	Samples from Alexandra Road Works			
	7 a.m.	8 a.m.	9 a.m.	11 a.m.
After 1 hour ..	63.2	—	50.4	39.6
„ 2 hours ..	68.5	66.7	56.3	53.0
„ 3 „ ..	68.5	—	65.7	60.3
„ 4 „ ..	79.0	—	73.0	—
„ 5 „ ..	79.0	—	78.3	—
„ 24 „ ..	89.5	87.0	89.2	79.1
Suspended Matter Remaining after:—	Parts per 100,000			
2 hours' settlement ..	6.0	11.5	24.0	24.4
3 „ „ ..	6.0	—	18.8	18.5
24 „ „ ..	2.0	4.5	5.9	10.8

% Settlement	Samples from Pumping Stations		
	Northern	Southern	Central
After 1 hour ..	50.7	38.4	53.3
„ 2 hours ..	55.6	48.5	66.7
„ 3 „ ..	59.6	54.5	68.8
„ 4 „ ..	—	58.8	74.8
„ 5 „ ..	—	62.5	79.5
„ 24 „ ..	61.0	73.6	87.2
Suspended Matter Remaining after:—	Parts per 100,000		
2 hours' settlement ..	27.3	27.0	7.8
3 „ „ ..	24.8	23.8	7.3
24 „ „ ..	24.0	13.8	3.0

No crude night soil is dumped at Central pumping station and it is seen from the two tables above that the settlement of sewage from this place is practically the same as that from Alexandra Road at 7 a.m.

These results are verified by the daily analyses at Alexandra Road, where the Detritus and Sedimentation tanks abstract 60 per cent of the suspended matter present in the crude sewage and I consider these tanks are now working as efficiently as is possible with this class of sewage.

3. Variation in Strength of Sewage.

The success of a purification scheme will naturally depend on efficient treatment during that part of the day when the “load” is heaviest. At

Alexandra Road series of tests showed that this period occurs from 8 a.m. until 4 p.m. when the strength is approximately one-third more than the average for the 24 hours. As the usual routine analyses represent the average strength of a mixture of two-hourly samples taken throughout the 24 hours they will, of of course, not show the worst conditions under which the tanks, filter beds, etc. have to work.

4. Treatment of Crude Night soil in Digestion Tanks.

Six small tanks, with capacities ranging from 500 to 800 gallons each, were constructed at Alexandra Road in July to enable experiments to be carried out on the purification of night soil when kept apart from the water borne sewage.

When the tanks were first put in use they were "seeded" with digested Sedimentation tanks' sludge and the night soil was always kept slightly alkaline by the addition of the requisite amount of lime.

From the end of September the tanks had more or less settled down to the conditions and the results taken are the averages for October, November and December.

The six tanks were divided into primary tanks (Nos. 1, 3 and 5) and secondary tanks (Nos. 2, 4 and 6). The period of retention in the primary tanks averaged forty days and the sewage was then run into the secondary tanks, where it was retained for a similar period.

In the first experiment crude night soil was used and, in the other two experiments, the crude night soil was mixed with an equal volume of water. Daily additions of these substances were made to catch primary tank, which were also desludged daily. The secondary tanks received the sewage run off from the bottom of the primary tanks and these secondary tanks were also desludged daily. The only difference between the secondary tanks Nos. 4 and 6 was that small amounts of "seeded" Sedimentation tanks' sludge was added daily to the latter tank. Regular analyses of the solids put in and taken out of these tanks were made and some valuable conclusions were arrived at from the average results obtained.

The reduction in organic matter effected by digestion in these tanks, compared with the organic matter present in crude night soil, were as follows:—

After digestion in Tank No.:—	1	2	3	4	5	6
% Reduction of Organic Matter	65	70	74	75	61	72

These solids were free from noxious odour after passing through the primary tanks and were in practically as efficient a state of digestion as the sludge from the Sedimentation tanks, which have a value of about 2.0 for the ratio of organic to inorganic constituents. These experiments indicate that a mixture of equal quantities of night soil and water is almost completely digested in 40 days.

These results may have an important bearing on future purification of Singapore sewage, which may contain very much more dumped night soil than at present.

5. Sludge Gas from Sedimentation Tanks.

The double Sedimentation tank, which was modified to enable the sludge gas evolved to be collected, was in operation throughout the year, the gas being used for heating part of the digested Sedimentation tanks' sludge with a view to killing hookworm, etc.

The average volume of gas collected per day was 6,900 cubic feet and it contained approximately 30% of carbon dioxide and 70% of methane.

SEWAGE EFFLUENTS FROM HOUSE INSTALLATIONS.

Excluding the installations attached to Government houses which are not inspected by the Municipality, there were one hundred purification plants in existence, five of which were not in use throughout the whole year as the houses were connected to the sewer.

The great majority of the tanks were desludged at least three times each during the year and regular analyses of the effluents were made to determine the efficiency of purification.

Poor results from several installations were found to be due to the filter beds having become clogged and large accumulations of dirt were found in the beds when the coral was removed for cleaning.

With the exception of the 31 installations maintained by the Commissioners, these plants were apparently given very little attention by the owners and it is hoped that regulations will soon be in force to include all such plants under the Municipal scheme of maintenance. The average analysis of 85 tests carried out during the year on 28 plants controlled by the Commissioners was as follows:—

Average Annual Analysis for 1931	
Parts per 100,000	of Filter Bed Effluents.
Free Ammonia	0.77
Albuminoid Ammonia	0.10
Oxygen absorbed in 4 hours	1.08
Suspended Matter	3.15
Chlorides as Chlorine	3.40
Nitrates as Nitrogen	1.70

Although these results are satisfactory it was considered that better results might be obtained if the construction of the tank was modified in such a way that the sludge and scum undergoing digestion were kept quite apart from the incoming sewage particularly at the outlet end of the tank.

As mentioned in my previous report some experiments along these lines were carried out by adapting existing tanks to the two-storey Imhoff type.

In the plant chosen for the experiment there were two tanks, each of 2,000 gallons capacity, treating equal quantities of sewage daily from 18 houses occupied by approximately 180 persons.

One tank was altered in February 1931 and the results obtained compared with the analyses from the unaltered tank and the latter was altered in August and analyses again compared. Each sample used for analysis represented the average of one quarter hourly samples taken from 6 a.m. until 2 p.m. After alteration it was found that no scum got through the tank to the filter bed, the distributors of which kept remarkably clean.

Tests carried out in July show the difference in quality of both the tank and filter bed effluents from the altered and unaltered plants. The average results of the test during this period were as follows:—

Parts per 100,000	Effluent from	Effluent from	%
	Altered Tank	Unaltered Tank	Reduction
Free Ammonia	3.70	3.65	—
Albuminoid Ammonia	.35	.53	34.0
Oxygen absorbed in 4 hours	2.63	3.49	24.6
Suspended matter	7.7	9.85	21.8

Parts per 100,000	Bed Effluent from	Bed Effluent from	%
	Altered Tank	Unaltered Tank	Reduction
Free Ammonia	.54	.55	1.8
Albuminoid Ammonia	.16	.26	38.4
Oxygen absorbed in 4 hours	1.00	1.60	37.5
Suspended matter	5.1	8.8	42.0
Nitrates as Nitrogen	2.5	1.7	—

The analyses of the effluent from the filter bed of the second tank before and after alteration are also very interesting. The average results obtained were as follows:—

FILTER BED EFFLUENT FROM SECOND TANK.

	2 Weeks Before	2 Weeks After	%
	Alteration of Tank	Alteration of Tank	Reduction
Free Ammonia	.55	.45	18.2
Albuminoid Ammonia	.26	.15	42.3
Oxygen absorbed in 4 hours	1.60	.95	40.6
Suspended matter	8.8	4.0	54.5
Nitrates	1.7	1.7	—

This new type of tank has to be efficiently covered to prevent the breeding of mosquitoes in the sedimentation channel, which keeps entirely free from scum accumulation.

Most of the tanks which have been constructed in Singapore since the results of these experiments were known have been made on this Imhoff principle and alterations will possibly be made in some of the existing tanks.

SAMPLES FROM HEALTH DEPARTMENT.

The samples examined were received from various officers of the Department and include many unofficial samples bought by the Health Inspectors and by my own staff.

The details of the various samples analysed were as follows:—

1. **Milk and Milk Products.** Milk from itinerant vendors (358), Fresh milk from dairies and retail shops (70), Reconstituted milk (52), Human milk (1), Tinned natural milk (7), Sweetened condensed milk (32), Unsweetened condensed milk (4), Skimmed condensed milk (1), Milk powder (3), Baby food (1), Cream (1), Butter (32) and Ghee (12).

2. **Tinned Meat, Fish, Vegetables, Etc.** Bean curds (4), Pork (3), Beef (2), Fowl (5), Fish (3), Crab (6), Peas (22), Bamboo shoot (2), Fruit (6), Ginger (1), Mushroom (1) and miscellaneous samples (5).

3. **Water, Alcoholic Liquors, Etc.** Soda water from Factories and small Fountains (109), Water from bottle rinsings at Factories (12), Fruit juice and syrup (4), Whisky (1), Brandy (1), Beer (3), Samsoo (4), Ice (1), Spring Water (1), Water for salinity test (12) and Well water (56).

4. **Miscellaneous Samples.** Coffee (31), Tea dust (3), Margarine (12), Rice, Sago, Pearl barley and Soya bean flour (7), Jam (4), Chinese sauce (1), Japanese preserved eggs (1), Diabetic bread (2), Chinese biscuits (2), Toffee (2), Fertilisers, etc. (3), Vinum ipecacuanhae (1), Chinese face powders (144), Quinine (9), Chinese medicine (2), Urine (5) and other samples (5).

Milk from Itinerant Vendors. The analyses for the year show a very decided increase in the amount of “watering” of the milk sold, when compared with the previous year. A total of 358 samples were analysed as compared with 183 during 1930 and the percentage below standard was 45.5% as compared with 26.2% during 1930.

Presumably the actual number of samples “watered” was definitely higher than given above as there is a great deal of buffalo milk sold whereas the local standards are based on the usually accepted minima for cows’ milk, the fat of which is lower than in buffalo milk.

The following table summarises the results obtained for the year:—

		Samples from Licensed Vendors	Samples from Unlicensed Vendors
No. of analyses carried out		287	71
Deficiency in non-fatty solids	Number Per cent Range Average	118 41.1 0.6%/58.8% 15.1%	42 59.2 1.8%/57.7% 16.1%
Deficiency in fat	Number Per cent Range Average	6 2.1 1.5%/26.2% 8.7%	3 4.2 6.1%/10.8% 8.2%

Two samples from licensed vendors and one from an unlicensed vendor were deficient in both non-fatty solids and fat.

These figures, compared with the previous year, show a very marked increase in the number of cases of adulteration among the licensed vendors.

Fresh Cows’ Milk from Retail Shops. At the beginning of the year many samples were deficient in non-fatty solids and the firm concerned was notified. The analyses during the remainder of the year were satisfactory.

Reconstituted Milk. These were all above the required standards of fat and non-fatty solids.

Tinned Milk. The condensed milks were examined to check the dilution factor at present required in this Colony and firms were notified in the few instances where the factor was overstated. The natural milks, baby food and cream were sold in accordance with local requirements. One of the milk powders had too high a dilution factor. The skimmed condensed milk was on sale in very small quantities only and the vendor was warned after seizure of the stock.

Butter. The local regulations demand not less than 80% of milk fat and not more than 16% of water and 0.5% boron compounds estimated as boric acid. In no case was there found a substitution of foreign fat, the only points of non-conformity being a slight excess of water in three samples and a deficiency in fat, due to a very high salt content, in one sample. More than one half the samples contained boron compounds but the amounts ranged from 0.03% to 0.40% only. Four tins did not give the name and address of the manufacturer or agent, etc. and the firms were notified.

Ghee. There are no local regulations defining "ghee" and the twelve samples were analysed to ascertain the quality of the product sold. Three samples only consisted of pure milk fat (mostly that of the buffalo and, to a smaller extent, of the cow). It is possible that local regulations controlling the sale of ghee will be introduced in the near future.

Tinned Foods. The great majority of tinned foodstuffs examined were of Chinese origin, the remainder consisting mainly of tinned peas of European manufacture. With the exception of one sample of crab meat of Japanese manufacture, none of the foodstuffs were contaminated with lead and none showed contamination with tin higher than two grains per pound, which is usually accepted as a safe limit.

The 22 samples of tinned peas examined for metallic contamination consisted of Italian (2), French (2), Belgian (2), Dutch (2), Japanese (5) and Chinese (9). The Belgian, Dutch and one of the Japanese products were free from copper and the remaining samples, with the exception of those made in China, contained in the solid portion, less than 2 grains per pound of copper as crystalline sulphate. The Chinese samples were all contaminated, the amount rising as high as 11.9 grains per pound in the solid portion and averaging 6.3 in the solid or edible portion of the contents of the nine tins. The average value for the whole contents of these nine tins, *i.e.* solid and liquid, was 4.3 grains per pound of crystallised copper sulphate. There is no local standard but the permissible limit for prosecution purposes is being taken as two grains per pound of crystallised sulphate.

Soda Water, Etc. Routine analyses of the soda water made by the seven local factories showed the absence of metallic contamination but a few samples were below the prescribed limit for sodium bicarbonate (5 grains per pint). In one or two factories it was found that the bottles had not been cleaned satisfactorily.

Routine samples were taken from the small soda water fountains and the analyses were generally satisfactory. In a few cases metallic contamination was traced to the use of old machines containing relatively large amounts of solder and copper. In one case the concentration of lead was more than one part per 100,000 and this was traced to the presence of a length of lead, instead of tin, piping.

In the case of newly fitted machines requiring a licence the soda water was kept in the sealed machine overnight before sampling.

Of the 56 well waters examined 47 were contaminated with unoxidised sewage and were condemned.

Coffee. The local regulations require that the presence of chicory shall be clearly shown on the label, together with the percentage of coffee present. None of the coffee-chicory samples were correctly labelled and several so-called "coffee" samples consisted of coffee admixed with relatively large amounts of foreign seeds, probably roasted soya bean.

Margarine. The local regulations limit the water to 14 per cent, allow no colouring matter and require at least 5 per cent of sesame oil. In five samples the water content exceeded 14 per cent and all the samples, except one, contained colouring matter. In regard to sesame oil it was found that the colouring matter, "butter yellow," present in several samples, interfered with the operation of the Baudouin test.

The local regulations which are based on those of New Zealand are, in my opinion, unsuited to local conditions and should more closely follow the English regulations.

Chinese Face Powders. The 144 samples examined consisted of official and unofficial samples and 57 were found to contain lead carbonate. Official action was taken in 28 cases, where the lead carbonate content averaged 21.7 per cent and ranged from 1.2 per cent to 46.1 per cent.

SAMPLES FROM ENGINEERING DEPARTMENT.

Analyses were made of the following substances:—

Coal	37
Granite filler for elutriation test	13
Glazed-ware pipes for absorption test	5
Samples from Sewers for sea-water infiltration	276
Linseed oils for standard specification	4
Turpentine for standard specification	2
Asphalt	2
Iron rust	1

SAMPLES FROM ELECTRICAL DEPARTMENT.

Coal	156
Ash and flue dust	2
Corroded lead sheets	2
Paint	1
Contracts from cut-out gear, corroded cable, etc.	4

SAMPLES FROM WATER DEPARTMENT.

Coal	27
Water from Woodleigh-Kallang concrete pipe	24
Various waters for contamination, etc.	23
Lime for calcium oxide content	20
Fertilisers, etc. for catchment areas	9

SAMPLES FROM GAS DEPARTMENT.

Spent oxide for moisture and sulphur	10
Coal and coke	8
Gas liquor	1
"Benzol"	1

(77-D)

In addition various analyses of coal gas taken both from the town supply and from the retorts at Kallang Gas Works were carried out and reported to the Gas Engineer.

VARIOUS.

Two samples from C. R. E. Johore and six samples from the Superintendent, Town Cleansing Department, were examined. The latter included four samples of earth dug from large pits at the Serangoon Road dumping ground. These samples represented garbage, etc. buried for from three years to one year and were examined to ascertain the amount of decomposition attained.

STAFF.

With the exception of a few days, I was present throughout the year. Mr. J. F. Clark, M.Sc., F.I.C., A.R.C.S., D.I.C. was appointed as Deputy Analyst and commenced duty on May 16th, 1931.

An extra laboratory assistant, with the Senior Cambridge qualification, was appointed and commenced duty on July 1st, 1931.

I have pleasure in recording my thanks to Mr. Clark and to the five laboratory assistants for their valuable co-operation in routine and research analyses.

I have the honour to be,

Sir,

Your obedient servant,

R. E. WILLGRESS,

A.R.C.S., B.Sc., A.I.C.,

Municipal Analyst.

TABLE A.

Average and Ranges of Monthly Analyses of Singapore and Johore Raw Waters for 1931.

Parts per 100,000	MAC. RITCHIE RESERVOIR		PEIRCE RESERVOIR		SULTAN IBRAHIM RESERVOIR		PULAI III CATCHMENT		PONTIAN KECHIL	
	Ranges	Average	Ranges	Average	Ranges	Average	Ranges	Average	Ranges	Average
Total Solids, dried at 180°C	2.24 / 3.92	3.09	2.24 / 4.56	3.42	3.64 / 7.36	4.73	2.64 / 4.96	3.88	3.12 / 9.20	6.82
Organic matter ..	1.08 / 2.16	1.60	.88 / 2.48	1.75	1.24 / 4.64	2.10	1.12 / 3.36	1.54	.80 / 4.16	2.87
Mineral matter ..	1.08 / 2.28	1.49	.88 / 2.32	1.67	1.96 / 3.60	2.63	1.44 / 3.52	2.34	2.00 / 5.24	3.95
Total Solids in Suspension ..	—	0.21	—	0.63	—	0.57	—	0.18	—	0.36
Free and Saline Ammonia ..	Abs. / .006	.001	'Abs. / .003	.001	.001 / .024	.008	Abs. / .018	.004	Abs. / .008	.003
Albuminoid Ammonia ..	.003 / .018	.006	.002 / .007	.0045	.001 / .012	.005	.001 / .012	.004	.001 / .0075	.004
Nitrites as Nitrogen ..	—	Abs.	—	Abs.	—	Abs.	—	Abs.	—	Abs.
Nitrates as Nitrogen ..	Trace / .0036	.0016	Trace / .003	.0008	Trace / .0064	.0022	Trace / .0048	.0014	Trace / .0048	.0017
Oxygen absorbed in 3 mins.	.021 / .032	.030	.016 / .136	.044	.032 / .092	.048	.008 / .052	.029	.044 / .106	.074
Oxygen absorbed in 4 hours	.054 / .189	.094	.073 / .252	.131	.094 / .181	.123	.010 / .141	.099	.023 / .365	.217
Chlorides as Chlorine ..	.1 / .2	.11	.1 / .2	.11	.1 / .2	.11	.1 / .2	.11	.1 / .8	.17
IRON: 1. Total ..	.02 / .085	.050	.01 / .13	.051	.02 / .16	.07	.01 / .08	.04	.01 / .09	.04
2. In solution ..	—	.022	—	.022	—	—	—	—	—	—
3. In suspension ..	—	.028	—	.029	—	—	—	—	—	—
Reaction—P _H Value ..	7.3 / 7.5	7.4	7.3 / 7.4	7.35	7.1 / 7.5	7.3	7.3 / 7.5	7.4	7.2 / 7.6	7.3
Alkalinity as (CaCO ₃) ..	.3 / .6	.4	.2 / .5	.4	.2 / 1.0	.7	.35 / 2.6	.9	.4 / 4.4	2.5
Carbon Dioxide ..	.15 / .35	.25	.15 / .3	.2	.5 / 1.3	.7	.2 / .8	.4	.3 / .6	.4

TABLE B.
Averages and Ranges of Analyses, carried out Bi-Monthly During 1931
of Depth Samples in Pulau II Impounding Reservoir (Johore).

DEPTHS BELOW SURFACE	AMMONIA				IRON		CO ₂		ALKALINITY AS CaCO ₃ EQUIV		REACTION P _H VALUE	
	FREE AND SALINE		ALBUMINOID		Ranges	Average	Ranges	Average	Ranges	Average	Ranges	Average
	Ranges	Average	Ranges	Average								
10 feet .. ..	.001/ .004	.003	.006/ .014	.009	.01/ .15	.050	.2/1.10	.45	.5/1.3	.8	7.1/7.5	7.3
20 feet .. ..	.002/ .006	.0045	.006/ .012	.008	.01/ .55	.11	.2/2.7	1.0	.7/1.6	.9	6.9/7.5	7.2
30 feet .. ..	.002/ .009	.005	.006/ .010	.008	.01/1.20	.30	.3/3.45	1.5	.8/2.8	1.2	6.9/7.5	7.2
40 feet .. ..	.003/ .018	.008	.003/ .014	.010	.01/1.0	.31	.2/3.0	1.6	.7/2.0	1.2	7.0/7.5	7.2
50 feet .. ..	.003/ .026	.013	.004/ .013	.009	.01/1.3	.44	.5/3.8	1.8	.6/2.2	1.3	6.7/7.5	7.1
60 feet .. ..	.003/ .028	.011	.007/ .016	.10	.01/1.4	.36	.3/3.7	1.7	.6/2.6	1.35	6.7/7.4	7.1
70 feet .. ..	.003/ .028	.0155	.006/ .013	.009	.01/2.2	.54	.3/3.8	1.9	.6/2.6	1.4	6.8/7.4	7.1
80 feet .. ..	.010/ .026	.011	.008/ .014	.011	.04/2.4	.56	.6/3.8	1.9	.6/2.4	1.4	6.7/7.4	7.1

TABLE C.

Averages and Ranges of Analyses carried out Daily During 1931, of the
Filtered Waters, Etc., Supplied to Singapore.

* PARTS PER 100,000		BUKIT TIMAH ROAD CLEAR WATER TANK		WOODLEIGH CLEAR WATER TANK		PULAI (JOHORE) CLEAR WATER TANK		LORONG LALAT TAP SUPPLY		COLEMAN STREET TAP SUPPLY		HAVELOCK ROAD TAP SUPPLY	
		Ranges	Average	Ranges	Average	Ranges	Average	Ranges	Average	Ranges	Average	Ranges	Average
COLOUR IN LOVIBOND 2 FOOT TINTOMETER:													
	Yellow ..	.8 / 8.1	1.20	.7 / 5.8	1.38	.5 / 11.0	1.37	.7 / 1.1	.93	.7 / 2.0	1.00	.6 / 11.8	1.35
	Red ..	.1 / 2.0	.14	.1 / .16	.19	.1 / 3.0	.23	.1 / .1	.10	.1 / .5	.11	.1 / 4.5	.19
	Blue ..	.1 / 1.0	.26	.1 / .9	.34	.1 / 1.2	.40	.1 / .9	.53	.1 / 1.0	.38	.1 / 1.3	.37
	Iron * ..	.01 / .18	.019	.005 / .06	.020	.01 / .31	.017	.005 / .035	.022	.005 / .05	.018	.005 / .09	.018
	Alkalinity (as CaCO ₃) *	.2 / 1.0	.41	.5 / 1.6	.95	.3 / 4.6	1.39	1.0 / 1.6	1.33	.6 / 1.6	.96	.8 / 2.2	1.22
	Carbon Dioxide * ..	.15 / .80	.41	.2 / .55	.38	.1 / 1.05	.49	—	—	—	—	—	—
	Reaction—PH Value ..	7.2 / 7.6	7.45	7.3 / 7.6	7.45	7.2 / 7.6	7.42	—	—	7.2 / 7.6	7.43	—	—

(80-D)

(81-D)

TABLE D.

Averages and Ranges of Monthly Analyses, During 1931, of Singapore
Tap Supply.

PARTS PER 100,000	HAVELOCK ROAD TAP SUPPLY		COLEMAN STREET TAP SUPPLY	
	Ranges	Average	Ranges	Average
Total Solids, dried at 180°C ..	3.00 /5.36	3.93	1.92 /4.08	2.82
Organic Solids	1.04 /3.12	1.62	.64 /1.84	1.24
Mineral Matter .. ..	.96 /3.60	2.31	1.04 /2.40	1.58
Total Solids in Suspension ..	—	0.12	—	0.19
Free and Saline Ammonia ..	Abs. / .002	.001	Abs. / .002	.0005
Albuminoid Ammonia .. ..	.001/ .004	.0025	.002/ .004	.0025
Nitrites as Nitrogen	—	Absent	—	Absent
Nitrates as Nitrogen	Trace/ .0048	.0015	Trace/ .0018	.0007
Oxygen absorbed in 3 minutes ..	.003/ .022	.012	.005/ .025	.009
Oxygen absorbed in 4 hours ..	.016/ .078	.035	.010/ .086	.030
Chlorides as Chlorine .. ..	.1 / .2	.11	.1 / .2	.11
Total: 1. Iron .. ..	.01 / .055	.021	.01 / .045	.020
2. In Solution	—	.009	—	.010
3. In Suspension	—	.012	—	.010
Reaction—P Value	7.3 /7.5	7.4	7.2 /7.5	7.4
Alkalinity (as CaCO ₃) .. ..	.9 /1.9	1.2	.8 /1.6	1.0
Carbon Dioxide .. ..	.2 / .6	.4	.3 / .6	.45
Colour in Lovibond 2 ft. tintometer:				
Yellow .. ..	.8 /3.0	1.4	.9 /1.3	1.05
Red .. ..	.1 / .5	.2	.1 / .2	.1
Blue .. ..	.1 / .6	.3	.1 / .7	.3

TABLE E.

Average of Daily Analyses of Crude Sewage and Effluents from the Alexandra Road Sewage Works During 1931.

Parts per 100,000	AMMONIA		Oxygen Absorbed in 4 Hours	Suspended Matter	Nitrates as Nitrogen	Chlorides as Chlorine	Dissolved Oxygen Absorbed in 3 Days
	Free	Alb.					
Crude Sewage	4.0	1.0	10.27	34.4	—	55	—
Detritus tank effluent ..	—	—	—	31.2	—	—	—
Sedimentation tank effluent ..	4.7	.7	6.16	15.2	—	57	—
Humus tank effluent from:—							
Filter beds (C & D) ..	1.04	.10	1.32	1.18	.9	59	.55
Filter beds (A & B) mixed with bio-flocculation effluent ..	2.07	.16	1.97	1.87	.4	60	1.44

TABLE F.

Ranges of Daily Analyses of Crude Sewage and Effluents from Alexandra Road Works During 1931.

Parts per 100,000	AMMONIA		Oxygen Absorbed in 4 Hours	Suspended Matter	Nitrates as Nitrogen	Chlorides as Chlorine	Dissolved Oxygen Absorbed in 3 Days
	Free	Alb.					
Crude Sewage	{ 2.0 / 6.5	.2 / 2.2	5.25/ 14.96	18.0/62.5	—	23/158	—
Detritus tank effluent ..	—	—	—	16.3/57.8	—	—	—
Sedimentation tank effluent ..	{ 2.4 / 8.4	.2 / 1.6	3.34/ 10.84	9.1/38.9	—	23/130	—
Humus tank effluent from:—							
Filter beds (C & D) ..	{ .36/ 2.40	.02/ .26	.76/2.16	.3/ 3.8	.2/2.2	38/90	.17/ .91
Filter beds (A & B) mixed with bio-flocculation effluent ..	{ .90/ 3.36	.04/ .40	1.01/ 2.77	.5/ 4.8	.2/1.2	39/110	.91/2.76

(83-D)

TABLE G.

Average Monthly Analyses of the Humus Tanks' Effluent from the 21
new Filter Beds in Blocks C and D.

Parts per 100,000			AMMONIA		Oxygen Absorbed in 4 Hours	Suspended Matter	Chlorides as Chlorine	Nitrates as Nitrogen
			Free	Alb.				
January	..	..	1.57	.12	1.45	1.31	52	.5
February	..	..	1.70	.10	1.51	1.18	63	.4
March	..	..	1.11	.12	1.28	1.49	66	.7
April	..	..	1.31	.11	1.68	1.41	66	.6
May	..	..	1.37	.09	1.51	1.7	62	.7
June	..	..	1.21	.13	1.54	2.1	56	.8
July	..	..	1.10	.14	1.49	1.8	53	1.1
August	..	..	.71	.09	1.25	1.0	50	1.3
September	..	..	.61	.06	1.13	.6	51	1.3
October	..	..	.59	.09	1.11	.6	64	1.3
November	..	..	.60	.06	.95	.5	62	1.1
December	..	..	.60	.07	.96	.5	57	1.2

SINGAPORE MUNICIPALITY

Nineteenth Annual Report

OF THE

MUNICIPAL BACTERIOLOGICAL

LABORATORY

FOR THE YEAR

1931

BY

COLIN C. B. GILMOUR, M.A., M.B., CH.B.

BACTERIOLOGICAL LABORATORY,

SINGAPORE,

12th February, 1932.

THE MUNICIPAL HEALTH OFFICER,
SINGAPORE.

SIR,

I have the honour to report on the work done in this department during the year 1931.

I. PUBLIC HEALTH EXAMINATIONS.

Twenty-seven thousand, four hundred, and thirty-eight examinations were carried out as compared with 21,854 last year. This is a record for the Laboratory.

MALARIA.

Six thousand and thirty-nine blood films were received. This large number, a record for the laboratory, includes 1016 thick films examined in connection with a special investigation, still being carried on. Malaria parasites were found in 618 of the films examined, or in 10.2 per cent, which is 12.9 per cent less than last year. Excluding the thick films, only one of which was positive, the percentage is 12.3. There were 196 subtertian infections, 415 benign tertian, 1 quartan, and 6 mixed infections. Of the positive films, 80 came from the Johore Water Works, as compared with 455 last year, 3 from Mandai Quarry, 312 from the Health Department and 223 from practitioners.

TUBERCULOSIS.

Human Specimens.—735 specimens of sputum, 7 of faeces, 8 of pathological exudates, and 15 of cerebro-spinal fluid were examined. The tubercle bacillus was demonstrated in 180 specimens of sputum, and in 4 of cerebro-spinal fluid.

Animal Specimens (Swine).—22 glands, 1 lung, and 1 liver, were received, and in 9 glands, the tubercle bacillus was demonstrated.

Animal Specimens (Oxen).—One specimen of bullock's glands was examined. The specific bacillus was not found.

TYPHOID AND PARATYPHOID FEVERS.

Four hundred agglutination tests were made, and 17 sera gave a positive reaction with the *B. typhosus*, and 2 with the *B. paratyphosus* A. Thirty-two specimens of faeces, 4 of urine, and 4 of blood were examined, and the *B. typhosus* was isolated from 3 of the faecal specimens.

DYSENTERY.

Amoebic.—Nine hundred and nineteen specimens were examined in 35 of which the *E. histolytica* or its cysts were found, and the *E. coli*, or its cystic form, was found in 106.

Bacillary.—Two hundred and thirty-four specimens were received from 3 of which the *B. dysenteriae* (Shiga) was isolated, while the *B. dysenteriae* (Flexner) was isolated from 1, and the *B. dysenteriae* (Hiss & Russel) from 6. Nearly all the specimens shewed no signs of dysentery to the naked eye at all, and were only plated because this examination was asked for.

PLAGUE.

No specimens of human origin were received.

Rats.—Six thousand, two hundred, and fourteen rats were dissected, all of which were free from plague. Three hundred and forty two rats came from the Port Area, and ships at the wharves, through the Port Health Officer. The remainder were trapped in the town, or in godowns and tongkangs along the Singapore River.

As in previous years, *rattus* prevails on the ships, and at the wharves, there being about 7 *rattus* caught to 1 *decumanus*. In the town, godowns and tongkangs, there were 2.6 *decumanus* to 1 *rattus*, a very different proportion to what has been found in previous years. The change is due to including tongkangs in the river in the area trapped by our rat-catcher.

The ratio of *decumanus* to *rattus* during the last ten years is shown in the following table.—

Year	Total Rats	Ratio of <i>Decumanus</i> to <i>Rattus</i>	Human Plague Cases
1921	—	—	28
1922	53	—	38
1923	510	8 to 1	52
1924	1218	5 to 1	20
1925	4217	15 to 1	57
1926	5241	10 to 1	7
1927	4137	10 to 1	4
1928	398	—	5
1929	130	—	3
1930	3958	50 to 1	0
1931	5872	2.6 to 1	0

The species and distribution of the rats dissected was as follows:—

Source	R. <i>Decumanus</i>		R. <i>Rattus</i>		Concolor		Musculus		Crociodura	Total
	M	F	M	F	M	F	M	F		
Ports & Ships ..	23	18	109	189	2	—	—	—	1	342
Town ..	1444	2143	589	771	77	93	37	70	648	5872
	1467	2161	698	960	79	93	37	70	649	6214
Total ..	3628		1658		172		107		649	6214

Fleas.—Five thousand, one hundred and fifty-two fleas were caught, an average of 0.8 per rat or 80 per hundred rats. The index was 180

for the port, and 80 for the town. A single rat caught on a ship in port in October harboured 136 fleas. No identification of species of fleas was made as a routine, but, when towards the end of the year, flea breeding experiments were carried out, it was found that all the fleas were *X. cheopis*.

CEREBRO-SPINAL FEVER.

Twenty-nine specimens of cerebro-spinal fluid were received in 11 of which the meningococcus was demonstrated.

DIPHTHERIA.

One thousand, seven hundred, and sixty-five specimens were examined from 127 of which *Coryn. diphtheriae* was isolated in culture. Nearly all the positive cultures came from the Middleton Hospital. One thousand and twenty-eight swabs came from the registrars and in 18 of these, the *Coryn. diphtheriae* was found in culture. Five cultures were tested for virulence of which one was virulent (3 +), and one doubtful. This last was a mixed culture.

LEPROSY.

Fifty-three specimens were examined and the *My. leprae* was demonstrated in 21.

Miscellaneous Included:—

310	specimens of Urine for General Examination.
64	„ Pathological Exudates for General Examination.
7	„ Prostatic Smears for Gonococci (all — ve).
3	„ Urine for Gonococci (1 + ve).
510	„ Pus for Gonococci (137 + ve).
4,679	„ Faeces for Intestinal parasites (*).
32	„ Faeces (dog) for Intestinal parasites (24 Anky + ve). (3 Ascaris + ve).
1	„ Faeces (bullock) for Intestinal parasites (— ve).
4	„ Faeces for Food Poisoning (— ve).
6	„ Blood (bullock) for Parasites (— ve).
1	„ Blood (bullock) for <i>B. abortus</i> (— ve).
1	„ Blood (human) for <i>B. abortus</i> (— ve).
2	„ Blood for Weil-Felix Reaction (— ve).
3	„ Blood for Filaria (— ve).
1	„ Blood for Leukaemia (+ ve).
9	„ Blood for Differential Count.
5	„ Blood for Culture.
2	„ Serum for <i>T. Pallida</i> (1 + ve).
2	„ Sputum for Pneumococci (1 + ve).
1	„ Cerebro-spinal fluid for Pneumococci (+ ve).
2	„ Pork for <i>Trichina spiralis</i> (+ ve).
2	„ Pork for <i>Sarcosporidia</i> (+ ve).
3	„ Tinned Provisions for Sterility.
22	„ Empty soda water bottles for Sterility.
15	„ Soda Water.
1	„ Guano.
98	„ Milk.
4	„ Tumour.
2	„ Melon seeds for organisms.
9	„ Dumped Refuse.
2	lots of Fleas (all <i>Ctenocephalus</i>).

(*) = 1,408 Ankylostome ova, 20 Strongyloids, 919 Ascaris, 892 Trichuris, 101 Oxyuris, 3 Tapeworms and 30 Lamblia cysts.

The faecal specimens included a large number received in connection with a special investigation still going on.

The three samples of tinned provisions were satisfactory. They comprised tinned roast duck, roast pig, and fish, and all were sterile after 72 hours incubation, both in aerobic and anaerobic culture. I doubt if bacteriological examination of tinned provisions is worth doing here, except possibly as a piece of pure research work, when there is complaint of illness due to the consumption of a specified article, or complaints of spoilage, or difficulty in manufacture, or of the sample being "unfit for human consumption."

The two samples of melon seeds were examined on receipt of complaints by the Health Office. Attention was paid to the possibility of tuberculosis being caused by the consumption of these seeds and guinea pigs were inoculated with washings of the samples purchased. The results of these tests were negative. On general bacteriological examination, one sample was found to contain 324,000 bacteria per gramme, and faecal organisms were present in large numbers. The other sample, which were salted, and, incidentally, not nearly as palatable, or attractive in appearance as the first, contained 9,500 bacteria per gramme, and no faecal organisms could be isolated.

The fleas enumerated above were collections made on receipt of complaints. They all proved to be *Ctenocophalus felis*.

The sample of guano was examined for the presence of the organisms of cholera, dysentery, or enteric. None of these were found.

The samples of soda water were examined prior to the issue of licences to manufacturers. Seven brands were examined in April of which 4 were good. In December, 8 brands were examined all of which were good. In addition, samples were taken of bottles after washing, and just before filling, for in some cases, a considerable interval of time elapses between these operations. In December, 10 out of 14 of these bottles were satisfactory.

The milk samples consisted almost wholly of pasteurized, reconstituted milk, and of fresh milk produced by a local company. The object was to control the milk bacteriologically and ensure that the products were up to the bacteriological standard of "Grade A pasteurized milk" viz. a total count of less than 30,000 colonies per c.c. and no *B. coli* in less than 0.1 c.c. That standard was maintained almost continuously throughout the year, both in the pasteurized and fresh milk. In most cases, the counts were much lower than the numbers allowed, and some astonishingly low counts were obtained. Forty-six samples of each kind of milk were examined and the percentage of samples in which *B. coli* (presumptive) was present was as follows:—

	In 10 c.c.	In 1 c.c.	In 0.1 c.c.	In 0.01 c.c.
Pasteurized	100	32.7	8.7	0.0
Fresh Milk	100	59.7	15.2	4.3

A total count as high as 30,000 per c.c. was found only once in the fresh milk and once in the pasteurized milk when delivered to the laboratory. Direct microscopic examination of the milks was also made, and confirmed the low counts obtained on plating. In several instances, these direct examinations suggested causes for increased counts and

enabled the producer to remedy the defect. With moderate counts this is sometimes possible but, when the total number of colonies is anything from 100,000 to 40,000,000 per c.c. and faecal organisms are present in 0.00001 c.c.s. and upwards, as occurred in other milks examined, one can do little but say that the milk is filthy.

The nine samples of dumped refuse were examined for the Conservancy Department who wished to know how long bacterial decomposition went on in buried refuse. The results showed active bacterial growth both of aerobic and anaerobic organisms after six months burial.

II. WATER.

Nine thousand, four hundred and ninety-eight routine samples from the Municipal supply were analysed, and the results were satisfactory. A large number of routine samples were discontinued during the year. The figures for the "tap" sample, which represents the water delivered to the consumer, are the average from 3 different taps. If these taps are considered separately, it will be found, on referring to the table, that the laboratory tap gives a better result than the others, one of the best results we have ever obtained.

The position and type of the tap, affect the sample and as far as possible all samples are taken from special sampling taps, without washers and used for no other purpose.

Some alarm was felt in November when it was found that flood water had got into the clear water tank at Woodleigh. Samples were taken immediately and it was found that the amount of contamination was not dangerous. Nevertheless the tank was emptied, and very careful analysis done for some days till it was evident that the period of danger was past.

The following table shews the results obtained from the chief points of the water system during the year.

Source	Total Counts per C. C.	Lactose Fermenters Present in					
		— 100	+ 100	+ 10	+ 1	+ 0.1	+ 0.01
Sultan Ibrahim V.T. ..	249	5.9	94.1	58.1	10.0	—	—
" " C.W.T. ..	77	56.1	43.9	11.7	—	—	—
Seletar Reservoir V.T. ..	449	2.1	97.9	81.6	25.5	1.2	—
Pierce Reservoir V.T. ..	91	—	100	76.6	7.1	—	—
MacRitchie Reservoir V.T. ..	127	7.5	92.5	73.7	15.1	0.4	—
Bukit Timah Raw Water ..	314	—	100	87.0	24.1	—	—
Woodleigh Raw Water ..	164	1.3	98.7	47.7	5.9	—	—
Pearls Hill I. ..	158	36.9	63.1	18.8	1.7	—	—
Pearls Hill II. ..	161	38.4	61.6	19.4	—	—	—
Fort Canning Reservoir ..	82	66.9	33.1	3.8	0.4	—	—
Average of three taps Office, L. Lalat & Havelock Road	79	66.1	33.9	8.6	0.8	—	—
Tap (Office) ..	65	81.6	18.4	—	—	—	—
Tap (Lorong Lalat) ..	75	81.2	18.8	4.6	0.8	—	—
Tap (Havelock Road) ..	97	35.6	64.4	21.3	1.7	—	—

One hundred and seventy-six miscellaneous samples were examined, including four daily samples from the Mount Emily Swimming Pool, daily samples from the Y.M.C.A. pool, weekly samples from the Tanglin Club Pool, and occasional samples from the sea water pool at the Swimming Club. A rather unsightly looking scum formed at one time on the water there but it was found that this was composed almost

entirely of diatoms, amorphous matter and some sulphur bacteria, and that no bacteria of faecal origin were present in it. The results obtained from Mount Emily pool are as follows:—

Source	Total Counts	Lactose Fermenters Present in						
		- 100	+ 100	+ 10	+ 1	+ 0.1	+ 0.01	+ 0.001
Mt. Emily Swimming Pool, Shallow 7 a.m.	235	—	100	70	10.1	—	—	—
Mt. Emily Swimming Pool, Deep 7 a.m.	314	—	100	77.7	18.0	0.9	—	—
Mt. Emily Swimming Pool, Shallow 2 p.m.	240	1.5	98.5	67.0	9.4	—	—	—
Mt. Emily Swimming Pool, Deep 2 p.m.	294	0.5	99.5	75.9	13.3	—	—	—

These results are of course very poor for a swimming pool but I understand it has been decided to install a chlorination plant which will treat the whole of the water in the pool once every four hours. This plant will be in operation before this report is presented. The results shew little difference between the shallow and deep ends but a decided difference between the morning and afternoon samples, the latter being much the better. It is possible that this is due to the effect of sunlight.

III. SEWAGE.

Forty-five samples of chlorinated sewage from the Middleton Hospital were examined and proved that a satisfactory reduction in bacterial count was being obtained practically continuously.

One hundred and eighty-six samples of wash water for nightsoil pails were analysed for the Conservancy Department. This is done to control the use of disinfectant at the washing places in Albert Street and Peoples Park. The results obtained throughout the year were good using the disinfectant at a dilution of 1 in 1,000 except for a short time in November. Routine sampling of this water has been discontinued, and surprise samples only are taken now. So far they have been satisfactory.

IV. MORTUARY.

There were two post mortems only this year. The cause of death in each was Cardiac Failure consequent on Diphtheria. The small number of post mortems is of course due to the absence of cases of small pox, cholera, or plague during the year. It is only bodies suspected of being dead from one of the these diseases that are sent for post mortem examination to the Bacteriologist.

V. RESEARCH.

Work on resistance of local rats to plague, and variation in virulence of local strains of *B. pestis*, was discontinued during my absence on leave and has not yet been resumed.

Fleas.—An endeavour is being made to study the influence of ants on flea breeding. So far only one series of experiments has been carried out. This seems to show that if ants have access to the breeding places, the development from egg to pupa is definitely hindered, but of course

there are many fallacies *e.g.* I have not yet tried to find if the action of the ants is merely that they consume the food of the larvae, for they have not been seen carrying off the eggs. In two experiments in which the breeding jars were protected against ants, 25 fleas hatched out of one jar and 6 out of the other.

Two experiments were made in which ants were allowed access to jars as soon as the presence of larvae was proved. No fleas hatched out from these jars. In one experiment flea eggs were placed in a jar and ants encouraged to visit the jar. No development into larvae took place.

Nematode Larvae on Sewage Sludge.—Cultures of these larvae were made and an attempt was made to infect a guinea pig. This was unsuccessful. It was noted that when a drop of the culture fluid accidentally fell on the arm of the experimenter, intense itching was provoked. The sludge from the Imhoff tank is now heated before passing to the beds and comparison is being made between the heated and unheated sludge.

Soda Water.—One experiment was made to see whether there was any difference in the rate at which *B. coli* died out in Soda Water, as compared with distilled water. No material difference in the rate was found, but further experiment is being planned.

VI. STAFF.

I returned from leave to Europe in August and have to record my thanks to the officers who acted for me, and to the laboratory staff for their ungrudging and faithful work during a year when a record amount of work was done.

I have the honour to be,

Sir,

Your obedient servant,

COLIN C. B. GILMOUR,

M.A., M.B., Ch.B.,

Municipal Bacteriologist.

MUNICIPAL HEALTH DEPARTMENT,
SINGAPORE,

7th April, 1932.

THE MUNICIPAL HEALTH OFFICER,
SINGAPORE.

SIR,

I have the honour to submit my report for 1931.

CLINICS.

During the year a total of 12,384 new babies were taken on the registers at the three clinics or 75% of the total births as compared with 72% in 1930.

24,708 consultations were held in the clinics, and 87,795 visits were paid by the Health Visitors to babies in their own homes.

586 "clinic" babies died, but to this low figure must be added 5,467 "removals," *e.g.* babies whose change of address could not be discovered, many of whom may have died. Both figures however (586 and 5,467) compare favourably with those for 1930 (1,211 deaths and 8,375 removals).

SUPERVISION OF MIDWIVES.

The District Sisters paid 19,654 visits of which 14,996 were first visits and 2,762 re-visits. There were 1,896 visits to wrong addresses. The 2,762 revisits were paid to sick mothers only, the large majority of whom were suffering from beri-beri and other diseases directly attributable to poverty and want. Sick babies are not revisited by the District Sisters, but by the Clinic Sisters or the Health Visitors—this second visit being paid within 24 hours of the first.

Of the 14,996 mothers (*e.g.* first visits), 14,334 were found to be in a satisfactory condition, 432 were ill and 57 had died. 173 had removed. Only 3,526 were living in houses of more than one room, the others (11,470) being in cubicles or huts.

1,050 mothers were confined in hospital or by private doctors, 156 by A class midwives, 9,056 by B class and 1,505 by C class. 793 were looked after by friends and 2,436 were self-attended. The number of births registered being 16,488 (including 108 twins), about 71% mothers received some kind of skilled attention, if that of the C class midwives be counted as "skilled." The corresponding figure for 1930 was 73%.

The two municipal midwives attended 305 cases *e.g.* 174 confinements and 131 post-natal cases.

Doctors on the panel attended 72 poor cases.

Infants seen by the District Sisters numbered 14,238 or 86% of the total births, as compared with 68.1% in 1930. Of these 14,238

babies, 428 were ill and in addition 315 were suffering from umbilical sepsis. Of the 866 babies who were not seen, 297 were still born and 145 had died—making a total of 442 deaths to which must be added a percentage of the 424 babies reported as “removed” and “given away.”

There were 108 cases of twins.

Of the 14,238 babies seen, 12,172 were being breast-fed. At the time of the Sister's first visit, this figure is much too high, unfortunately, as a very large number of infants are weaned during their second week of life, when their mothers return to work. In many cases, the physical condition of the mothers was so poor that breast-feeding was impossible, though the distribution of free condensed milk as “supplementary feeds” did much to remedy this.

During the year the number of Chinese Health Visitors was augmented by three (from 16 to 19). It is now possible to obtain the services of well-educated, highly qualified nurses and the excellent training and experience of the three new visitors are a real addition to the efficiency of the staff. A fourth Health Visitor was appointed to fill the vacancy caused by the death of Nurse Khi Neo in December. A further change was made by the creation of the post of Staff Nurse, to which Nurse Ethel Lee was promoted—a “staff nurse” being a Health Visitor of sufficient experience and ability to perform the work of a Sister with its attendant responsibilities and need of initiative, including of course the supervision of the local midwives. As Staff-Nurse, Miss Lee is at present doing the work of a District Sister on leave, and carrying out her duties to my entire satisfaction.

The new clinic at Joo Chiat was opened on October 1st, and is proving a popular centre. It “taps” Frankels Estate and the increasingly large number of Malays who come regularly to the clinic is most gratifying. I feel much might be done to reduce the high death rate among Malay babies by gaining the confidence of their parents and so persuading them to adopt the principles of child welfare. The large majority of them are devoted to their children and even over-anxious about their health their mistakes are those of ignorance and superstition rather than of indifference or unkindness and could and must be corrected by overcoming their very real fear and mistrust of our “foreign” ways.

This is also true of the Chinese, whose babies are more often killed by kindness (over feeding, Chinese medicine, etc.) than by neglect or cruelty.

In this connection, it is interesting to note that the Infantile deaths (3,369) for the year include only two accidental burns and one infanticide.

The large majority of babies who attend the clinics are either “milk” cases (*e.g.* children of very poor parents to whom milk is distributed) or infants suffering from some minor ailment, to whom advice and simple treatment are given. Most of the parents are too poor or too busy to bring their healthy babies to the clinics for advice alone, but their coming regularly once a week for free milk is certainly teaching them the value of preventive medicine as well as alleviating real want.

Most of the sick babies were suffering from **Disorders of Nutrition**, due to inherited debility (in many cases directly due to deficient nourishment of the mother during pregnancy) or to wrong feeding. Unfortunately, the percentage of breast-fed babies is not high (except among the Japanese, whose children are exceptionally healthy) and we have to contend against every possible form of ignorance in artificial

feeding, from dirty, germladen feeding-bottles to the giving of rice, cornflour and bananas to infants of a few weeks old. Coughs associated with fever were another frequent complaint; many of these responded quickly to simple treatment, but others were sent to hospital or to private doctors as cases of pneumonia, often fatal. There were a great many cases of boils during the hottest months. These came out in crops on the scalp and seemed to be associated with recent shaving of the hair analagous to the favus or "foul shave" seen in Great Britain. The causal organism was usually the staphylococcus albus, and several obstinate cases responded well to autogenous vaccines. One severe case of staph. aureus infection did particularly well, gaining two lbs. in weight during a course of eight graduated doses (of vaccine). But the condition was a serious one and caused a great deal of anaemia and general debility among Chinese babies.

Chronic Otitis media and purulent conjunctivitis also accounted for much ill-health, the latter disease being frequently due to gonococcal infection, contracted at birth. Of 209 eye smears examined, 66 were positive (*e.g.* contained gonococci) and efforts were made to arrange for the treatment of the mothers as well as the babies, but much more work could be done in this direction.

Nineteen cases of Malaria were seen during the year—including one acute cerebral type who died in hospital—the others were treated with coco-quinine and small doses of iron.

11 cases of Rickets were noted, and in only 5 of these were there well-marked clinical signs of the disease—these babies were all bottle-fed and responded to routine dietary treatment.

Congenital deformities included two cases of imperforate anus and a hare-lip, all three being successfully operated on in the general hospital.

As "clinic" babies formed 75% of the total births, an analysis of the causes of death may be of some interest. As in the Registrar's returns for the year, "convulsions" account for over 25% of the total deaths, pneumonia, and other respiratory diseases for about 20%, diseases of Early Infancy for 20% and enteritis for nearly 15%—the fifth on the list is syphilis, 2.3%, but I believe that this figure is much too low and that a very large number of the infantile deaths notified as "convulsions" and as "diseases of early infancy" (*e.g.* prematurity and congenital debility) are really spirochaeta pallida infections, and that the same disease is responsible for a large proportion of the still-births. This impression is being confirmed by the results obtained from the examination of the blood of a series of mothers whose babies die before reaching the age of one year. Details of this investigation will be published later.

Should the amount of venereal disease prove to be as great as one suspects, the problem of providing adequate treatment will be a very real and urgent one, and I feel sure that its solution would not only greatly lower the infantile death rate and the number of still-births, but also discount a great deal of chronic ill-health of both mothers and babies.

During the year there has been most satisfactory co-operation with the other infant welfare organisations and the hospitals, where a large number of "clinic" babies and mothers have been treated as both in-patients and out-patients. The number of parents, however, who refuse to take their sick babies to hospital is very much larger than those who consent to do so, and I think that this difficulty might be met

by the provision of a small municipal hospital attached to the clinic itself, with which the mothers would be familiar, and where they could themselves stay during the treatment of their children.

In addition to the 432 sick mothers visited by the District Sisters at their own homes, a large number of women came to the clinics seeking advice and treatment. The large majority were cases of beri-beri, directly due, I believe, to real poverty which was often little short of starvation. There were also numerous cases of anaemia and general debility due to venereal disease and to intestinal parasites. Most of these women were only too willing to regularly attend the clinics, and I think the establishing of ante natal and post-natal clinics must be considered as a future extension of the Department.

There were 57 "clinic" maternal deaths during the year, 16 from puerperal sepsis, 11 from haemorrhage during labour, 2 from Eclampsia and 1 from dystocia—the others were due to general diseases (16) or of uncertain cause (11).

The 30 deaths directly associated with childbirth were due to faulty midwifery (or to the lack of skilled attention during confinement) and to the same causes must be attributed the 315 cases of umbilical sepsis in babies, which accounts for most of the 66 infantile deaths from tetanus (see Registrar's Returns). On the other hand, I do not think the midwives can be held responsible for many of the still-births, as dystocia appears to be exceedingly rare among Asiatic women.

95 specimens that were examined for intestinal parasites were from babies under 6 months old in an attempt to associate the frequent occurrence of infantile diarrhoea and enteritis with the presence of intestinal "worms." The results were entirely negative.

I have the honour to be,

Sir,

Your obedient servant,

Sd. E. V. CROWE,

Lady Medical Officer.

MIDDLETON HOSPITAL,

SINGAPORE,

2nd February, 1932.

THE MUNICIPAL HEALTH OFFICER,
SINGAPORE.

SIR,

I have the honour to present the annual report of the Middleton Hospital for the year 1931.

The following table summarises the cases treated during the year.

Disease	Remaining From 1930	Admitted	Discharged	Died	Remaining
Smallpox	—	3	2	1	—
Cholera	—	—	—	—	—
Plague	—	—	—	—	—
Chickenpox	10	196	176	—	30
Measles	—	58	58	—	—
Diphtheria	1	46	27	16	4
Cerebro-spinal Fever ..	—	6	1	5	—
Erysipelas	—	1	—	1	—
Whooping Cough ..	—	20	18	2	—
Mumps	—	17	14	—	3
Contacts	—	22	21	—	1
Rubella	—	14	14	—	—
Puerperal Fever ..	—	2	—	2	—
Enteric Fever ..	—	1	1	—	—
Influenza	—	2	2	—	—
Tuberculosis ..	—	1	—	—	1
Other Diseases ..	—	44	38	6	—
Total ..	11	433	372	33	39

The number of admissions, 433, is the lowest for 5 years, and largely due to the drop in Chickenpox which I put down to the lessened immigration of Tamil labour, and the repatriation of many coolies.

1. **Smallpox.** There were only three cases of whom 1 died.

2. **Diphtheria.** As in previous years this was the most serious disease treated, the crude mortality being 34.8 per cent. Of the 16 cases who died, 10 died within 24 hours of admission, and excluding these, the mortality was 17 per cent. There were 18 cases of laryngeal diphtheria of whom 13 required tracheotomy and 7 of these died, 4 within 24 hours of operation. The percentage of laryngeal cases was 39 per cent. Of the fatal cases, 1 gave a history of 14 days illness prior to admission, 2 were ill for 10 days, 1 for 9, 2 for 7, 1 for 6, 3 for 5, 4 for 4 days, and 2 for 3 days before admission, and their ages varied from

27 days to 21 years. Altogether 1,227,000 units of anti-diphtheritic serum were used costing \$736.50. The average amount of serum used per case was 26,674 units.

3. **Other Diseases.** Out of 44 patients admitted as having one of the notifiable infectious diseases, and found to be suffering from some other disease, 6 died. The causes of death were Pneumonia 2, Meningitis 2, Convulsions 1, Otitis Media 1. The remainder were discharged or transferred to other hospitals.

4. **Nationalities.** The patients admitted belonged to the following nationalities:—

Europeans	24	for	205 days.
Eurasians	17	„	254 „
Chinese	132	„	1,534 „
Malays	15	„	161 „
Tamils	245	„	3,194 „

The total number of days spent in hospital, including those spent by patients remaining from 1930 was 5,440 as compared with 11,112 in 1930.

5. The following table shows the admissions to Middleton Hospital during the past ten years.

Diseases	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
Cholera	—	—	—	—	16	20	4	—	—	—
Smallpox	248	2	8	9	30	16	8	9	—	3
Plague	20	29	11	21	1	2	3	—	—	—
Chickenpox	103	172	210	277	155	180	324	553	334	196
Diphtheria	13	18	17	32	25	16	42	38	35	46
Cerebro-spinal Fever ..	29	6	13	7	6	14	13	3	17	6
Influenza	1	—	—	—	—	—	—	—	—	2
Measles	23	20	29	49	70	69	94	42	60	58
Erysipelas	3	8	5	2	11	3	6	1	7	1
Mumps	—	6	—	27	47	79	48	66	10	17
Whooping Cough	—	1	—	1	6	4	8	1	14	20
Typhoid Fever	—	1	—	1	3	1	—	—	1	1
Tuberculosis	4	2	—	1	1	—	1	1	1	1
German Measles	1	—	21	7	3	18	7	6	5	14
Scarlet Fever	1	—	—	—	1	—	3	6	—	—
Typhus Fever	—	—	—	—	—	—	1	—	—	—
Puerperal Fever	—	—	—	—	—	1	—	—	1	2
Contacts	—	—	—	19	18	42	45	17	48	22
Other Diseases	58	15	41	17	32	52	63	63	44	44
Total ..	504	280	355	470	425	517	670	806	577	433

6. The students from the Medical College attended for Clinical instruction in infectious diseases.

I have the honour to be,

Sir,

Your obedient servant,

COLIN C. B. GILMOUR,

M.A., M.B., Ch.B.,

Medical Superintendent.

MUNICIPAL HEALTH OFFICE,
SINGAPORE,

29th February, 1932.

THE MUNICIPAL HEALTH OFFICER,
SINGAPORE.

SIR,

I have the honour to submit my 12th Annual Report on the condition of the Municipal Markets and inspection of foodstuffs sold in them and in the shops and stores in the city.

MUNICIPAL MARKETS.

We have only ten Municipal Markets now, the small shelter at the 3rd Milestone Geylang having been demolished and all licensees removed to the more commodious and modern building at Sims Avenue. The old Joo Chiat Market which we took over from Government with the Siglap area has been vacated and a new one erected in the Joo Chiat Road near the East Coast Road. Two private markets were thus dispensed with. These private markets were always difficult to control as there never seemed to be anyone with authority there, their main object being revenue and not the public weal. There is one more private market at Morse Road but plans have been submitted for modernization and this should bring it up to the level of our own markets during the present year.

CLEANSING.

This has followed on routine lines, the cleansing staff of each market seeing to the quick removal of garbage to the central dumps from which conservancy lorries collect as often as necessary. In addition all necessary limewashing and painting is done when required. Every stall-holder is responsible for his stall and surroundings and each has a covered bin for refuse. Our markets compare very favourably with those of adjacent towns.

REPAIRS.

Clyde Terrace Market. To facilitate auction of fish the auction area was enlarged and two new slabs placed in it. Twelve new fish slabs were erected. A new pattern combining slab and storage chamber beneath was devised but further improvement by partitions is desirable to economize on the ice used.

Poultry Section. The whole roof was repainted. The main market is undergoing a complete painting and overhaul.

ELLENBOROUGH.

Eating Section. The re-roofing of this shed was completed early in the year.

The water system which was antiquated was removed and surface hydrants are now installed.

Telok Ayer. Eighteen concrete stalls were re-built and the cast iron legs encased in cement to strengthen them.

The 4 remaining pork tables were renewed and all awnings repaired or replaced.

Kandang Kerbau. All the carriageways were re-surfaced.

Other Markets. Minor repairs were carried out and with the exception of Grange Road Market all are in good condition, or rather, will be when this year's schedule has been completed.

UN SOUND FOODSTUFFS.

108,579 cattles or just over 60 tons of unsound foodstuffs were destroyed as unfit for human consumption. This is all taken to the incinerators by our staffs and receipts obtained for it.

PRICES AND QUANTITY OF FOODSTUFFS.

A little over $\frac{1}{2}$ million cattles less foodstuffs passed through the markets during the year under review but the value, in other words, prices dropped by \$1,085,000, clear evidence of the slump and the public's diminishing purchasing power as, of course, every other expense is cut before the market money is touched.

Fish is cheaper all round. Mutton fell from 55 cents to 25 cents per lb. but has risen latterly to 30 cents and is steady. This drop was due to a price war between the several Cattle Companies. The difference in price of 25 cents per lb. for the 383,000 lbs. that passed through the markets represents \$90,000 to the Cattle Coys. or \$280 a day. This mostly comes from the poorer classes.

REVENUE.

		1929	1930	1931
1. Clyde Terrace	..	176,279.73	163,492.65	135,399.03
2. Ellenborough	..	117,015.90	108,947.37	93,524.63
3. Telok Ayer	..	29,213.94	29,290.31	27,250.93
4. Orchard Road	..	14,090.50	13,927.50	15,962.00
5. Kandang Kerbau	..	19,651.00	18,892.00	18,811.50
6. Grange Road	..	2,130.00	2,628.00	2,247.00
7. Geylang	..	3,979.00	3,919.00	577.00 *
Sims Avenue	..	—	1,345.00 †	4,034.00
8. Maxwell	..	11,904.00	449.00	9,152.00
9. Peoples Park H.S.	..	13,889.00	14,176.00	13,254.50
10. Joo Chiat	..	3,120.00	3,350.00	3,178.00
		<u>\$371,440.77</u>	<u>\$360,416.83</u>	<u>\$323,390.59</u>

* 2 months only.

† 3 months only.

5% COMMISSION ON FRESH FISH SALES.

Market	1927	1928	1929	1930	1931
	\$	\$	\$	\$	\$
Clyde Terrace ..	122,158.66	107,983.64	120,051.98	110,660.65	84,582.03
Ellenborough ..	77,826.82	75,703.26	71,866.59	64,071.37	50,106.13
Telok Ayer ..	2,769.82	2,330.87	1,902.30	1,462.31	1,037.93
	<u>202,755.30</u>	<u>186,017.77</u>	<u>193,821.87</u>	<u>176,194.33</u>	<u>135,726.09</u>

A glance at the above figures will show that the drop in Revenue is accounted for mostly by the large drop in 5% Commission on fresh fish viz \$40,000. This was largely due to a partial boycott of Japanese caught fish during October and November when cargoes were virtually given away. As an offset to this deficit, extra revenue was derived from increased accommodation in Orchard Road Market (\$2,000) the transfer of Geylang Market licensees to Sims Avenue (\$2,700) and the collection of rents in Maxwell Market which had been in abeyance until April (\$8,700). This brought the loss of revenue for the year to the region of \$27,000.

STAFF.

There has been no change in the personnel of the staffs. Two Market Keepers were granted local leave and two reported sick and were given leave during the year.

Thirty-three of the native staff were treated, one jaga was injured by a falling gate and one coolie was stabbed by a hawker. Police action was taken and the assailant committed to prison.

GENERAL.

Joo Chiat Market was opened in September. Many applications were received but as accommodation for stall-holders in the old Joo Chiat Market, in Reshty's private market and the East Coast Road Market had to take precedence, outside applicants stood no chance. A ballot was held and all stalls taken up. Business however is gradually dwindling as licensed shops around which are handier to the public get all the trade. Only 50% of the stalls are being paid for and quite a number of these are not being utilized.

Orchard Road Market. Flies were noticed in great numbers and many examinations for likely breeding places carried out. The road at the back of the market was made up and house to house inspection of the surroundings. It was then found that the dust-bins of adjacent premises were rarely cleaned properly and after this was attended to the nuisance was greatly modified and improves continually.

Special reports, etc. A report and sketch plans for conversion of Peoples Park Hawkers Shelters into a restaurant was submitted in January.

Report on accommodation in Sims Avenue for the Geylang Shelter licensees was approved and all stall-holders were transferred to Sims Avenue at Chinese New Year (17th February). The shelter was removed to Jalan Besar for use as a pig dépôt.

Morse Road Private Market. A sketch plan of present building and stalls and two sketch plans of suggested layouts were submitted with a report in December.

A plan and suggestions for a market at Pasir Panjang was submitted on request to a Government Health Officer.

Monthly. Malayan Fisheries return to Officer in charge Fisheries.

Quarterly. Stock of Foodstuffs in market to Registrar of Statistics.

TOWN.

32,724 cases, etc, of unsound foodstuffs were destroyed as unfit for human consumption.

In April a consignment of condensed milk was invoiced Skimmed Milk in error. I examined it in the presence of a representative of the consignee and as it was found to be condensed milk it was passed for sale.

Several surveys of sweets, etc. have been made in the Auction rooms and those considered unfit for human consumption have been readily surrendered by the owners and destroyed.

A shop to shop inspection was carried out with the help of the four senior inspectors but only about 3,000 tins were discovered blown and these were all destroyed.

Hawkers in School Compounds. These were all visited and on the whole were satisfactory and clean.

Illegally Slaughtered Pork. 1,582 catties were seized and the owners prosecuted. Fines amounting to \$2,290 were inflicted.

Samples at the Request of the Municipal Analyst. Samples of face powder, coffee, milk, etc. have been purchased and where breaches of the Ordinance or Food Regulations have been committed prosecutions were instituted.

I attach returns showing the amount of foodstuffs passing through the Markets with their value, the amount of foodstuffs destroyed as unfit for human consumption and a return of vacant stalls as on December, 1931.

I have the honour to be,

Sir,

Your obedient servant.

M. MACMAHON,

Cert. R. San. Inst.,

Food and Market Inspector.

RETURN OF SOME OF THE FOODSTUFFS PASSING THROUGH MARKETS.

During the Year 1931.

Market	Wetfish ctts.	Boiled fish ctts.	Shell fish ctts.	Beef ctts.	Mutton lbs.	Pork ctts.	HEADS						Bean cakes ctts.	Bean sprouts ctts.	Approximate Value \$ cts.
							Fowls	Capons	Geese	Ducks	Pigeons	Turkeys			
Clyde Terrace	13,759,316	33,652	6,830	367,981	173,630	297,338	20,684	—	1,165	19,331	7,829	—	272,930	20,360	2,188,044 35
Ellenborough	4,807,986	12,455	266,100	15,753	1,387	643,688	29,271	1,152	1,675	29,324	—	—	136,550	34,020	1,444,122 97
Telok Ayer	100,257	—	63,560	22,469	64,574	212,304	52,371	—	401	38,727	1,306	223	—	—	258,153 36
Kandang Kerbau	1,176,535	34,497	39,540	221,895	156,209	530,033	63,900	136	30	8,933	411	10	36,989	—	681,471 36
Orchard Road	747,685	29,737	—	182,696	28,003	349,661	58,956	132	160	4,894	5,508	70	33,875	58,223	469,706 04
Total	20,591,779	110,341	376,030	810,794	383,803	2,033,024	225,182	1,420	3,431	101,209	15,054	303	500,344	92,603	5,041,498 08

M. MACMAHON,
Food and Market Inspector.

UN SOUND FOODSTUFFS DESTROYED.

1931.

Market	Wetfish ctts.	Saltfish ctts.	Beef ctts.	Mutton ctts.	Pork ctts.	Vegetable ctts.	Fruits ctts.	Tinned Goods		Bottles preserves No.	Eggs No.	Misc:	Total Items
								Cases	Tins				
Clyde Terrace ..	18,607	856	2,711	—	100	15,544	3,175	—	9	—	784	—	
Ellenborough ..	2,533	74	—	—	229	2,657	37	—	14	—	282	232	
Telok Ayer ..	98	50	—	—	12	19,489	8,713	—	—	—	129	25	
Kandang Kerbau ..	432	111	—	—	140	3,554	2,197	—	89	—	—	—	
Orchard Road ..	977	39	—	—	271	7,044	6,637	—	14	—	172	137	
Other Small Markets ..	1,540	238	8	4	290	4,967	843	—	14	—	1,790	711	
	24,187	1,368	2,719	4	1,042	53,255	21,602	—	140	—	3,157	1,105	108,579
Town ..	13	7	lbs. 9,480	lbs. 2,070	252 1,416	hams 40	774	1,076	12,083	547	—	4,966	32,724
Total ..	24,200	1,375	12,199	2,074	252 2,458	hams 53,295	22,376	1,076	12,223	547	3,157	6,071	141,303

(103-D)

M. MACMAHON,
Food and Market Inspector.

SUMMARY OF VACANT STALLS END OF DECEMBER, 1931.

	Clyde Terrace	Ellen- borough	Telok Ayer	Orchard Road	Kandang Kerbau	Maxwell Road	Sim's Avenue	Joo Chiat	Grange Road	Peoples Park
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Dry Goods ..	8	—	6	3	—	11	—	1	—	—
Beef ..	4	—	—	—	—	6	1	2	4	—
Salted Vegetables ..	—	—	2	—	—	2	2	—	—	—
Mutton ..	—	—	—	—	—	1	—	3	2	—
Pork ..	—	—	4	1	—	10	4	5	1	—
Curry Stuff ..	—	—	—	—	—	—	—	—	—	—
Bean Cakes ..	—	1	—	2	—	7	—	1	—	—
Poultry ..	10	15	2	—	—	15	3	1	—	—
Vegetables and Fruits	15	1	15	10	2	26	12	13	8	44
Eggs ..	—	—	—	2	—	1	—	2	—	1
Money Changer ..	—	—	—	—	—	—	—	—	1	—
Eating ..	—	—	3	—	—	—	—	—	—	16
Fish ..	22	6	7	8	—	15	2	18	6	7
Cold Storage* Shell Fish ..	—	—	—	—	—	—	—	—	1*	—
Provisions† Hawkers ..	11	5	—	—	—	—	—	—	1†	—
Miscellaneous‡ Provisions Dressed Ducks	—	—	—	—	—	4	—	—	2‡	—
Total ..	70	28	30	26	2	98	24	46	26	68

M. MACMAHON,
Food and Market Inspector.

HEALTH DEPARTMENT.

Return of Prosecutions for Year ending 31st December, 1931.

OFFENCES		TOTAL				
		Prosecutions	Withdrawn	Not Served	Convictions	Fines
						\$ cts.
MUNICIPAL ORDINANCE 135.						
Obstructions	.. .. .	—	—	—	—	—
Offensive matter flowing into Public Drain	.. .. .	—	—	—	—	—
Establishing a private market	.. .. .	—	—	—	—	—
Unlicensed Offensive Trades	.. .. .	66	6	4	56	419 00
Using nightsoil/or urine as manure	.. .. .	1	—	—	1	14 50
Latrine etc. notice not complied with	.. .. .	4	—	—	4	22 50
Nightsoil keep for more than 48 hours	.. .. .	2	—	1	1	7 50
Filthy premises	.. .. .	65	6	6	53	443 00
Limewash notice not complied with	.. .. .	—	—	—	—	—
Non-compliance of notice for the destruction of rats and mice	.. .. .	—	—	—	—	—
Non-compliance of notice of demolition order of insanitary dwelling	.. .. .	3	—	—	3	39 50
Allowing premises to be overcrowded	.. .. .	—	—	—	—	—
Non-compliance with Nuisance Notice	.. .. .	16	1	—	15	40 50
" " " Order	.. .. .	35	8	2	25	182 00
" " " Closing Order	.. .. .	8	—	—	8	9 50
Carried Forward		200	21	13	166	1,178 00

HEALTH DEPARTMENT.

Return of Prosecutions for Year ending 31st December, 1931.—(Contd.)

OFFENCES	TOTAL					Fines \$ cts. 1,178 00
	Prosecutions	Withdrawn	Not Served	Convictions		
<i>Brought Forward</i> ..	200	21	13	166		
Non-compliance of order for demolition of house unfit for human habitation Section 241	—	—	—	—	—	
Non-compliance with Well Notice 247	6	1	3	2	12 00	
Opening Well without permission 247	4	—	1	3	14 50	
License not exhibited 371	1	—	—	1	5 00	
BYELAWS-SECTIONS 57 & 204 M. O. 135.						
Unlicensed Foodshops ,...	933	106	193	634	4,216 50	
“ Milk Vendors	55	1	1	53	660 00	
Recovery of Daily fines	73	15	14	44	555 50	
Employing women without permission of H. O. ..	—	—	—	—	—	
Breaches of the Piggery Byelaws	4	—	3	1	24 50	
Unlicensed Piggeries	36	1	2	33	126 00	
Filthy Stables, Cowsheds etc.	—	—	—	—	—	
Breaches of the Foodshop Byelaws	178	2	5	171	951 50	
“ “ Offensive Trades Byelaws	1	—	—	1	2 50	
<i>Carried Forward</i> ..	1,491	147	235	1,109	7,746 00	

HEALTH DEPARTMENT.

Return of Prosecutions for Year ending 31st December, 1931.—(Contd.)

OFFENCES	TOTAL				
	Prosecutions	Withdrawn	Not Served	Convictions	Fines
<i>Brought Forward</i> ..	1,491	147	235	1,109	7,746 00
MARKETS AND SLAUGHTER HOUSES.					
Selling vegetables within 50 yards of market Section 186	—	—	—	—	—
Unsound Food " 192	5	1	2	2	79 50
Slaughtering Animals excepts in Abattoirs " 197	97	3	5	89	3,869 00
Market Byelaws—Unlicensed Private Market	75	8	18	49	100 50
SALE OF FOOD AND DRUGS ORDINANCE No. 139.					
Refusing to sell milk for the purpose of Analysis	3	1	1	1	24 50
Selling Adulterated Milk Section 11-1	68	3	1	64	1,415 50
" Milk deficient in fat " 11-1	1	—	—	1	—
" Skimmed Milk " ..	1	—	—	1	14 50
Q. AND P. DISEASE ORDINANCE No. 157.					
Failing to report case of inf. Disease Section 3	—	—	—	—	—
Moving patient without permission " 15	—	—	—	—	—
Exposing patient while suffering " 15	—	—	—	—	—
Conveying patient in public vehicle " 19	—	—	—	—	—
Failing to have child vaccinated Section 3	260	8	17	235	32 50
" " bring child for inspection " 32	—	—	—	—	—
<i>Carried Forward</i> ..	2,001	171	279	1,551	13,282 00

HEALTH DEPARTMENT.

Return of Prosecutions for Year ending 31st December, 1931.—(Contd.)

OFFENCES	TOTAL				
	Prosecutions	Withdrawn	Not Served	Convictions	Fines
<i>Brought Forward</i> ..	2,001	171	279	1,551	\$ 13,282 00
REGISTRATION BIRTHS AND DEATHS ORDINANCE No. 59.					
Failing to Register Births Section 11	64	—	3	61	—
” ” Deaths ” 11-1	1	—	—	1	—
DESTRUCTION OF MOSQUITOS ORDINANCE No. 174.					
Failing to comply with notice Section 1-8	1	—	—	1	—
Recovery of costs of work done ” 7-1	—	—	—	—	—
Destroying Anti-malarial Works ” 14	1	—	—	1	—
Selling Cosmatic containing Lead Carbonate	14	—	—	14	153 50
	2,082	171	282	1,629	13,435 50

(108-D)

SUMMARY.

Total Inspections ..	..	..	20,599
” Prosecutions ..	..	..	2,082
” Withdrawn ..	..	..	171
” Not Served ..	..	..	282
” Convictions ..	..	..	1,629
” Fines ..	..	..	13,435.50

N.B.—Costs are not included in the amount of fines.

(Sd.) H. J. BENJAFIELD,
Chief Sanitary Inspector.

Return of Notices Served and complied with etc., during the Year 1931.

Nature of Notice	Brought forward from last Year	Served during the year	Total	Complied with during the year	Carried forward to next year	Remarks
Intimation Notice	47	273	320	231	33	56 Cancelled
Limewash Notice	208	1,086	1,394	1,204	157	33 do.
Nuisance Notice	11	84	95	56	33	6 do.
Demolition Order	—	2	2	1	—	1 do.
Well Notice	8	5	13	13	—	—
Anti Mosquito Notice	332	289	621	467	154	—
Abatement Order	—	6	6	2	4	—
Closing Order	—	14	14	2	—	12 do.
Total	706	1,759	2,465	1,976	381	108 Cancelled

(Sd.) H. J. BENJAFIELD,
Chief Sanitary Inspector.

MUNICIPAL HEALTH OFFICE.

Return of Arrest Cases during the Year 1931.

Date	Name	Address	By whom Arrested	Offence	By whom Tried	Results	Remarks
/1/31	Sim Ah Hong	Unknown	P. C. 2857	Possessing unchilled pork, bearing no Municipal Chop	4th Magst.	Fined \$100.00	Unchilled pork brought into Municipal limit from Rural Board area do.
do.	Khoo Yong Hai	do.	do.	do.	do.	" 100.00	
11/2/31	Seesankar	? Serangoon Road	do.	Unlicensed milk seller	2nd Magst.	" 10.00	
do.	Ramdalakah	? St. Michaels Road	do.	do.	do.	" 10.00	
do.	Taya Singh	31 McPherson Road	do.	do.	do.	" 10.00	
do.	Bisnath Singh	? Serangoon Road	do.	do.	do.	" 10.00	
do.	Kawala	31A Kallang Pudding	P. C. 317	do.	do.	" 10.00	
do.	Parameswara Ray	6th Mile Changi	Geylang Police St.	do.	do.	" 10.00	
do.	Mangurah	do.	do.	do.	do.	" 10.00	
do.	Ramasarai	Nil Kampong Batak	do.	do.	do.	" 10.00	
do.	Jag Deo	6th Mile Changi	do.	do.	do.	" 10.00	
do.	Deepan Roy	do.	do.	do.	do.	" 10.00	
28/2/31	Ng Chew Boy	50 Minto Road	P. C. 83	Failing to vaccinate a child	4th Magst.	" 4.50	
1/2/31	Rampat Guala	80-1 St. Michaels Road	K. C. Mitra	Unlicensed milk seller	do.	" 12.00	
do.	Jang Bahadur	do.	do.	do.	do.	" 12.00	
do.	Sanichar Guala	Kampong Batak	do.	do.	do.	" 12.00	
					Carried forward	\$340.50	

MUNICIPAL HEALTH OFFICE.

Return of Arrest Cases during the Year 1931.—(contd.)

Date	Name	Address	By whom Arrested	Offence	By whom Tried	Results	Remarks
1/2/31	Sunder Singh	Havelock Road	K. C. Mitra	Unlicensed milk seller	<i>Brought forward</i> ..	\$340.50	
do.	Ramgit Singh	7¾ Mile Changi Road	L. K. Soon	do.	4th Magst.	Fined 12.00	
do.	Indardeo Singh	6th do.	do.	do.	2nd Magst.	" 10.00	
do.	Bajarangi Rai	do.	do.	do.	do.	" 10.00	
13/2/31	Arunasalam	Bukit Timah Road	P. C. 209	do.	do.	" 10.00	
do.	Nacheeappan	do.	do.	do.	do.	" 10.00	
do.	Kandasamy	do.	do.	do.	do.	" 10.00	
do.	Saveoo	do.	do.	do.	do.	" 10.00	
do.	Muttiah	do.	do.	do.	do.	" 10.00	
do.	Karuppiah	do.	do.	do.	do.	" 10.00	
14/2/31	Jadunanan Singh	79 Dunlop Street	E. E. de Souza	do.	do.	" 5.50	
do.	Deorikah	145 Syed Alwi Road	do.	do.	do.	" 11.50	
do.	Lim Hai	4 Hasting Road	—	Illegal slaughtering of pigs	do.	" 50.00	
do.	Lim Teng	121 Changi Road	P. C. 3744	do.	do.	" 50.00	
19/3/31	Tan Ah Sang	82 Kim Kiat Road	P. C. 355	do.	do.	" 100.00	
10/4/31	Kong Hee	Unknown	P. C. 949	Having in his possession swine flesh without the Abattoir mark ..	do.	" 20.00	
do.	Sam Heng	do.	do.	do.	do.	" 20.00	
11/4/31	Low Chow Kwang	do.	P. C. 386	do.	do.	" 20.00	
				<i>Carried forward</i> ..		\$719.50	

MUNICIPAL HEALTH OFFICE.

Return of Arrest Cases during the Year 1931.—(contd.)

Date	Name	'Address	By whom Arrested	Offence	By whom Tried	Results	Remarks
11/4/31	Eng Thiang	Unknown	P. C. 386	Having in his possession swine flesh without the Abattoir mark ..	Brought forward ..	Fined 20.00	\$719.50
14/4/31	Tang Seng Chua	do.	P. C. 1064	do.	do.	"	20.00
do.	Wong Ah See	do.	do.	do.	do.	"	20.00
do.	Ng Teo	do.	P. C. 3814	do.	do.	"	20.00
do.	Tan Ah Soon	do.	do.	do.	do.	"	20.00
do.	Tay Ah Soo	do.	do.	do.	do.	"	20.00
5/5/31	Parameswara Rai	6th Mile Changi	P. C. 761	Unlicensed milk vendor	do.	"	25.00
do.	Ramasari	Kampong Batak	do.	do.	do.	"	25.00
do.	Ramasamy	7th Mile Siglap	do.	do.	do.	"	15.00
do.	Muttuah Singh	— McPherson Road	P. C. 669	do.	do.	"	10.00
do.	Moosundi Guala	80 St. Michaels Road	do.	do.	do.	"	10.00
do.	Ramdari Rai	— Tempenis Road	do.	do.	do.	"	10.00
/5/31	Doothnath Singh	80 St. Michaels Road	do.	do.	do.	"	10.00
do.	Heekanith	80 do.	do.	do.	do.	"	10.00
do.	Jagananan	31 McPherson Road	do.	do.	do.	"	10.00
do.	Koomnarow Singh	48 McPherson Road	do.	do.	do.	"	10.00
do.	Mahanhdin	— Serangoon Road	P. C. 94	do.	do.	"	10.00
do.	Koomar Singh	87 Dunlop Street	do.	do.	do.	"	10.00
					Carried forward ..		\$994.50

MUNICIPAL HEALTH OFFICE.

Return of Arrest Cases during the Year 1931.—(Contd.)

Date	Name	Address	By whom Arrested	Offence	By whom Tried	Results	Remarks
/31	Arnasalam	Lorong 7, 31 Geylang	P. C.	Unlicensed milk vendor	<i>Brought forward</i> ..	\$994.50	
8/6/31	Tay Weng Koon	Siglap Road	P. C.	Illegal slaughter of pigs	2nd Magst.	Fined 10.00	
4/6/31	Baras Nath	Changi Road	P. C.	Unlicensed milk vendor	4th Magst.	" 50.00	
do.	Munguoy Rai	do.	do.	do.	2nd Magst.	" 10.00	
do.	Tambasrah	515 Kampong Bugis	do.	do.	do.	" 10.00	
24/6/31	Jagdeo	Changi Road	do.	do.	do.	" 25.00	
26/6/31	Bikairna	Joo Chiat Road	P. C.	do.	do.	" 15.00	
18/6/31	Seah Ah Hong	184, Moulmein Road	P. C.	Illegal slaughter of pigs	do.	" 10.00	
do.	Sue Ah Lee	Unknown	do.	do.	do.	" 75.00	
10/6/31	Rasaram alias Letchmee	302 Upper Serangoon Road	P. C.	Unlicensed milk vendor	do.	" 10.00	
do.	Ramasamy	Upper Serangoon Road	do.	do.	do.	" 15.00	
do.	Velian	Yeo Chu Kang Road	do.	do.	do.	" 15.00	
28/7/31	Tay Low Hoe	216 Silat Road	P. C.	Possessing pork, same not having been slaughtered in Municipal Abattoir	3rd Magst.	50.00	
10/7/31	Paras Rai	6th Mile Changi	P. C.	Selling milk without a licence	2nd Magst.	25.00	
do.	Jagdeo	do.	do.	Unlicensed milk seller	do.	25.00	
do.	Ramdan Singh	do.	do.	do.	do.	5.00	Charge amended to failing to carry license
do.	Quek Chow Kwang	Katong Road	do.	Selling pork not bearing Municipal Abattoir mark	do.	50.00	
<i>Carried forward</i> ..						\$1,469.50	

MUNICIPAL HEALTH OFFICE.

Return of Arrest Cases during the Year 1931.—(Contd.)

Date	Name	Address	By whom Arrested	Offence	By whom Tried	Results	Remarks
10/7/31	Tay Tee Kiah	Joo Chiat Road	P. C. 1613	Selling pork not bearing Municipal Abattoir mark	Brought forward ..	\$1,469.50	
do.	Tay Tan Kong	Lorong 1 East Coast	do.	do.	do.	Fined 50.00	
16/7/31	Tan Yew	6th Mile Changi	P. C. 248	do.	do.	50.00	
do.	Tay Tow Boh	Joo Chiat Road	P. C. 819	do.	do.	50.00	
do.	Tan Khoo	East Coast Road	do.	do.	do.	30.00	
do.	Tan Keok	do.	do.	do.	do.	30.00	
do.	Teo Juan	do.	do.	do.	do.	30.00	
23/7/31	Paras Rai	6th Mile Changi	P. C. 317	Selling milk without a licence	do.	25.00	
do.	Tan Pian	88-G Joo Chiat Place	do.	Selling pork not bearing Municipal Abattoir mark	do.	100.00	
do.	Lee Eng Seng	do.	do.	do.	do.	30.00	
do.	Goh Ah Seong	do.	do.	do.	do.	30.00	
do.	Puah Siak Kwang	do.	do.	do.	do.	30.00	
do.	Chin Tan Yeow	Changi Road	do.	do.	do.	30.00	
do.	Tay Yap Chong	Telok Kurau Road	do.	do.	do.	30.00	
18/7/31	Chin Tay	95 Jalan Sultan	P. C. 3833	Unlawfully slaughtering of pigs in premises	do.	100.00	
do.	Chim Lock	do.	do.	do.	do.	100.00	
do.	Lock Wan San	do.	P. C. 1243	do.	do.	100.00	
				Carried forward	..	\$2,314.50	

MUNICIPAL HEALTH OFFICE.

Return of Arrest Cases during the Year 1931.—(Contd.)

(115-D)

Date	Name	Address	By whom Arrested	Offence	By whom Tried	Results	Remarks
18/7/31	Poon Kam Kee	95 Jalan Sultan	P. C. 1243	Unlawfully slaughtering of pigs in premises	Brought forward ..	\$2,314.50	
13/8/31	Tay Keng Hong	Joo Chiat Place	P. C. 132	Having in his possession swine flesh the same not having been slaughtered in M. C. Abattoir	2nd Magst. do.	Fined 100.00	
do.	Kee Tuan	Siglap Road	do.	do.	do.	" 30.00	
do.	Tay Hong	Lorong 1 East Coast	do.	do.	do.	" 50.00	
27/8/31	Tay Ng Wan	Joo Chiat Road	P. C. 248	do.	do.	" 25.00	
do.	Tay 'Ah Seoh	do.	do.	do.	do.	" 20.00	
do.	Tay Tan Koon	do.	do.	do.	do.	" 30.00	
2/9/31	Ramjat Singh	37 Serangoon Road		Selling milk without a licence	do.	" 75.00	
do.	Basamotoo	31 McPherson Road		do.	do.	" 20.00	
do.	Kandiah	Syed Alwee Road		do.	do.	" 10.00	
do.	Kasavan	6th Mile Up. Serangoon Rd.		do.	do.	Withdrawn	No proof of sale
9/9/31	Sennanam	31 McPherson Road		do.	do.	" 20.00	
do.	Ramlagoon Guala	do.		do.	do.	" 20.00	
15/9/31	Koh Lay	108 East Coast Road		Unlawful slaughter of pigs	do.	" 10.00	
do.	Tan Choon	do.		do.	do.	" 75.00	
do.	Tan Low	do.		do.	do.	" 25.00	
do.	Low Ah See	do.		do.	do.	" 25.00	
					Carried forward ..	\$2,874.50	

MUNICIPAL HEALTH OFFICE.

Return of Arrest Cases during the Year 1931.—(Contd.)

Date	Name	Address	By whom Arrested	Offence	By whom Tried	Results	Remarks
/31	Lim Yeow	85 East Coast Road	..	Unlawful slaughter of pigs	..	\$2,874.50	
do.	Ong Kiah	do.	..	do.	do.	Fined 75.00	
3/10/31	Tan Peng Lam	Changi Road	P. C. 1395	Possessing swine flesh unlawfully slaughtered	do.	25.00	
13/10/31	Tay Ah Keng	Changi Road	do.	do.	do.	25.00	
28/10/31	Poon Yeo	182 McPherson Road	P. C. 2857	do.	do.	30.00	
5/11/31	Tan Kee How	23 East Coast Road	P. C. 3913	Having in their possession swine flesh, the same not bearing the Municipal Abattoir mark	do.	30.00	
10/11/31	Tay Kee How	do.	P. C. 1240	do.	do.	50.00	
do.	Loh Joo	65 Lorong 203 East Coast Road	do.	do.	do.	100.00	
15/11/31	Chua Kim Tee	108-1 Serangoon Road	P. C. 3869	do.	do.	50.00	
3/11/31	See Oh	368 Alexandra Road	P. C. 1561	do.	do.	30.00	
					3rd Magst.	50.00	
					TOTAL	Fines \$3,339.50	

(116-D)

(Sd.) H. J. BENJAFIELD,

Chief Sanitary Inspector.

**RETURN OF LICENCES (OFFENSIVE TRADES) ISSUED
DURING THE YEAR 1931.**

Nature of Licence	Number issued	Amount		REMARKS.
		\$	cts.	
Blachan Store ..	8	192	00	
Brick Kiln ..				
Dye House ..	7	84	00	
Drying and Sorting Fish ..	4	48	00	
Fish Curing ..				
Fruit Preserving ..	5	212	50	
Knacker's Yard ..				
Lime Making ..				
Lye Making ..				
Laundry ..	345	345	00	
Offal Boiling ..				
Pottery Works ..				
Private Market ..				
Rags and Bones Store ..				
Sago Factory ..	4	200	00	
Sheep or Goat Pens ..	1	12	00	
Sugar Boiling ..	6	250	00	
Soap Boiling ..	7	72	00	
Tannery ..	5	250	00	
Cowsheds ..	2	75	00	
Cattle Sheds ..	19	470	93	
Pony Stables ..	8	85	00	
Piggery ..				
	421	\$2,296	43	

(Sd.) H. J. BENJAFIELD,
Chief Sanitary Inspector.

